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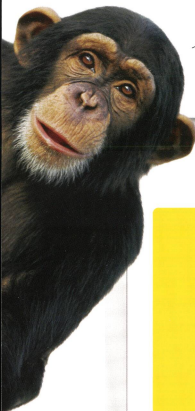
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07

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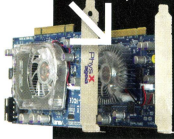
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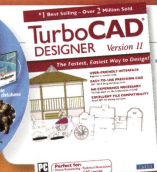
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TONY SARNO

Once I knew an editor who instructed his personal assistant not to pass on any critical letters from readers, as they thoroughly depressed him. I'm at the other extreme, constantly sifting through every single reader email which inevitably gets routed into my inbox. It's rare, however, that I get a lot of feedback in response to one particular review or comparison in the magazine, but this happened for our roundup of internet security suites in the last issue (*APC* June, page 69).

The general thrust was that while it's all very well to compare security suites against each other, the reality is that antivirus and firewall software is unacceptably poor compared to other software — from disproportionately sapping a PC's resources to having lots of bugs and spyware that barely works. The readers said we should not tolerate this.

Norton's suite copped the brunt of it. One reader, Terry Allen, who runs an IT consulting and support company, summed it up best: "We have this year removed an estimated 60-70 copies of Norton Internet Security 2006 from machines, owing to buggy, slow, crashing operation, so I was astounded at the rating in *APC*. Perhaps on brand-new machines with more than the average amount of RAM, it operates 'OK', but on just about every machine we see, it's unbelievably shite — if the client can actually get it to install."

McAfee also came in for a shelling. By me. It just so happened that after the comparison was published, my McAfee installation at home began playing up. The more I looked into it the angrier I got at the appalling ongoing verification system McAfee imposes on its users.

Unless your ADSL modem is on when your PC boots up, McAfee will produce a pop-up asking you to connect to the McAfee site to verify your subscription. Until you do, it disables the McAfee components you have installed — in my case, firewall and antivirus. So, when you eventually switch on your ADSL modem and connect to the web, you are not protected. Is McAfee kidding? But there's more. When I tried to verify my subscription, McAfee would not verify me because I couldn't remember my password. And it could not send me a replacement password because the email address I'd given it last year no longer existed (and nowhere in McAfee's labyrinthine customer support site was there any solution to this).

Yes, I should keep better track of my one million or so passwords, but this isn't good enough (from a company that has no hesitation in billing my credit card for its services). McAfee is lucky this happened to me after our security suite comparison went to print — because the final ratings may have been different.

tsarno@apcmagazines.com.au



THE REALITY IS THAT ANTIVIRUS AND FIREWALL SOFTWARE IS UNACCEPTABLY POOR COMPARED TO OTHER SOFTWARE

STAFF FILE

Name: Nick Race **Age:** 25 **APC job:** Labs Editor
Interests: Gizmos, gadgets, retro gaming, cooking and trying to perfect the art of home brewing **Favourite book:** *The Hyperion Cantos* by Dan Simmons **Favourite movie:** *Jim Jarmusch's Dead Man* **Dream job:** Professional beer connoisseur.

Joining *APC* from a tech support role a couple of years ago, Nick's ridden a rollercoaster of changes as the mag has evolved in that time. Promoted into the Labs Editor role, he's the go-to man for any hardware that comes in and out of the Labs, and he chooses what to review from the piles of gear sent in. His key performance

indicator — to know about technologies before anyone else (particularly other magazines!) — keeps him on the bleeding edge of tech. He's the one responsible for the primal screams emanating from the APC Labs (when hardware just doesn't work as it should).

Contrary to some readers' opinions, Nick owns more than one T-shirt — he just happens to be photographed in the same one every month. [It's a conspiracy! — Nick] He's nifty with tools, and loves pulling apart kit for the Exploded Tech section (and putting stuff together too). He enjoys tech, hates economy class and would love to spend more time building contraptions in the Labs.





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"Draft 802.11n" wireless gear poses risks

Buying into "draft 802.11n" wireless hardware might turn out to be a bad investment, reports *Tim Gaden*.

The sprint to gain market share in 802.11n — the latest high-speed wireless technology — has begun, 12 months before the final protocol standard is approved.

The successor to 802.11g can deliver theoretical speeds of 240Mbit/s using MIMO (Multiple Input Multiple Output) technology over multiple antennas mounted on the one unit. APC's test of Netgear's RangeMax 240 MIMO router (APC June, page 44) demonstrated real-life throughput of 96.2Mbit/s at a close 3m range, comparable to wired Ethernet.

But manufacturers including D-Link and Linksys are jockeying for a piece of the action with upcoming wireless routers based on the "draft 802.11n standard". Dell even has a laptop with "802.11n scalability" —

it has an inbuilt antenna that could support 802.11n if an upgrade card is made available in the future.

Pre-standard releases can pay off handsomely for tech companies. In 2004, little-known US chip manufacturer Broadcom took a punt on the likely-to-be final 802.11g standard and began shipping chips. Now, Broadcom is the number two wireless chip producer in the world.

For consumers, the picture is more mixed. While manufacturers race to repeat the Broadcom success story with 802.11n, users who buy early may be left with equipment which isn't interoperable with other 802.11n hardware and can't be upgraded (and may possibly interfere with existing wireless LAN equipment).

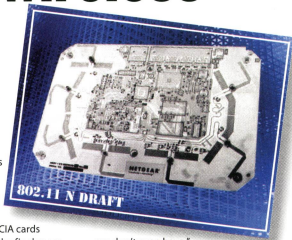
After pre-standard releases of 802.11g hardware, some users were left with wireless routers and PCMCIA cards that fell short of the final specs.

Research analyst Farpoint Group has warned that many existing "Draft N" devices display interoperability problems. Farpoint's lab tests demonstrated that even competing products with the same chip were often unable to communicate with each other.

Vivek Pathela, Netgear's marketing vice president says "draft" 802.11n hardware may not be upgradeable to the final standard. "I cannot say that we can upgrade to something that

we don't even have," he told *Wired* magazine.

However, the wait for final approval will be long. The draft specifications were only approved in late January. The IEEE (Institute of Electrical and Electronics Engineers) Working Group charged with ratifying the draft will pick over the specifications — with each modification needing approval from 75% of the group (before it is adopted). Even the most optimistic pundits forecast final approval only in late 2006 / early 2007.



Seagate's 750GB behemoth: faster, not just bigger

The world's first perpendicular desktop hard disk from Seagate packs 50% more capacity — and is substantially faster, too.

The early look APC had at Seagate's first perpendicular 3.5in desktop drive indicates that Seagate's claims of better speed — from perpendicular technology — are true.

The mammoth drive provides 750GB (699GB formatted); 50 per cent more than the previous generation 500GB 7200.9.

But in HDTach benchmark testing, the drive also had a 12 per cent faster average transfer

rate compared to its 500GB predecessor (which was built on the older longitudinal technology). The 7200.10 achieved 66.9MB/s average throughput compared to the 7200.9's 52.3MB/s.

The new perpendicular drive's burst speed (reading from the drive's cache memory) was actually fractionally slower at 239.2MB/s, compared to the 7200.9's 247.7MB/s. However, such a small speed difference isn't a reflection on the hard

perpendicular technology itself — but simply the performance of the memory chip Seagate has used on the drive (which no doubt will be improved in future revisions).

Now for the bad news though: at \$970 for the PATA and \$980 for the SATA version of the drive, the gigs aren't getting any cheaper. For 50 per cent greater capacity, it's 58 per cent more expensive (than its 500GB brother) at \$618.

Dan Warne and Nick Race





THE (A)PC REVOLUTION

July 1987

Evening News

THE NEW LONDON NEWSPAPERS



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GOOGLE SEES RED OVER IE7 SEARCH

Google is furious that Microsoft is corralling users into using MSN Search in Internet Explorer 7.

Microsoft has removed other search engines from the simple drop-down list found in earlier betas and made them a difficult-to-find option in a preference dialog box.

Google has raised its concerns about "anti-competitive behaviour" with the US Department of Justice and European Commission, but it's not stopping at mere words. Google is taking direct action by detecting copies of the new browser that reach its search page and displaying a prominent graphical advertisement (offering a download that modifies IE7 to make Google the default search engine).

The search giant is also chipping away at Microsoft's share of the browser market with its referral program for Internet Explorer and is indirectly supporting a new web site called Explorer Destroyer (www.explorerdestroyer.com) that provides webmasters with scripts which will stop Internet Explorer users at the front door and suggest (or insist) they download

and install Firefox. The webmaster gets US\$1 (AU\$1.31) from Google for every user who does.

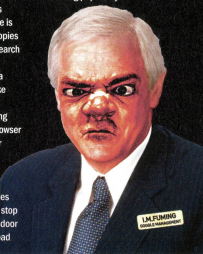
But Microsoft is taking the battle to Firefox with two new initiatives of its own, copying two Mozilla features that have helped Firefox's ever-increasing popularity.

First, it has launched a bug reporting site for IE7 (<http://connect.microsoft.com/site/feedback.aspx?SiteID=136>) called "Internet Explorer Feedback", which is very similar to the Bugzilla resource for Firefox and Mozilla's open source applications. Users will be able to lodge bug reports after getting a Windows Live ID or Microsoft Passport account.

Secondly, a new IE7 Add-Ons site (<http://ieaddons.com>) copies Mozilla's highly successful list of extensions for Firefox. The add-ons offer extra security, privacy and features, but unlike Firefox's extensions, many of them are commercial products.

Microsoft's new beta – publicly available with telephone tech support – also introduces RSS reading, smarter printing options, better CSS support, improved handling of Ajax and tighter security; features which it hopes will slow the bleeding of users to Firefox.

Tim Gaden



Samba gets torpedoed

You might have to throw out your Ethernet-connected hard drive if you want to upgrade to Windows Vista.

Windows Vista will only show the first 100 results in a hard drive (or file server) running the open source Samba file-sharing software, a Windows programmer has admitted in a blog post.

Raymond Chen, of the Microsoft Windows Shell development team, said Vista used a new "fast query" technology that was incompatible with Samba.

Samba is a widely-used open source network protocol utilised by Linux, Unix, Mac OS X (and other operating systems) for file sharing. It is designed to be compatible with Microsoft's Server Message Block (SMB) protocol which is used in Windows networking.

However, while the very latest versions of Samba (3.0.22 and above) have been updated to include "fast

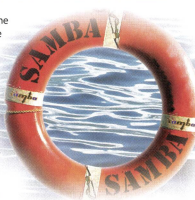
query" technology and interacts with Samba well.

Co-creator of Samba, Jeremy Allison, told APC that Microsoft could easily fix the problem. "It's an easy fix to make — [co-creator Andrew Tridgell] pointed it out to them — but they know that. It will be telling to see if they do fix it, or if they break against those particular revisions of Samba."

"This is just a by-product of the way Microsoft works," he said.

"They don't turn up to industry conferences, they don't test their code with Samba, Kerberos or any of the other interoperability people — they just don't care what other people are doing. They say they do — and spend a lot of money saying it — but in fact, they don't. Look at what they do, not what they say."

Tim Gaden



Card overboard: Will Microsoft force users into yet another upgrade?

query", it is a problem for many portable networked hard drives that use Samba internally. Drives may have to be discarded if the manufacturer doesn't provide a firmware update. Windows XP uses the older "slow

It looks like you're pirating software

Clippy was so annoying that Microsoft have turned his powers towards people who are running pirated copies of Windows.

"It looks like you're pirating software! Would you like to buy a copy?"

OK, the new Microsoft nagware doesn't actually feature Clippy, but he is there in spirit.



Microsoft's new nagware pop-ups will be automatically installed as part of Windows Update. They will periodically pop up and helpfully let you know that your copy of Windows is pirated — and offer you the opportunity to buy a valid licence key.

Microsoft Australia's Windows business manager Jeff Putt was keen to point out to APC that it was a "completely opt-in" system.

However, the "update", called Windows Genuine Advantage Notification, is classified as a high priority patch (usually only reserved for serious security patches) and is

automatically installed if a user presses the "express" button on Windows Update. The only way to avoid it is to press the "custom" button and manually deselect it.

WINDIZUPDATE

A new web site called WindizUpdate has been set up to allow Windows Update patches to be downloaded and installed through Firefox. It's not an official Microsoft service, so there are obvious security risks involved, but it doesn't install Microsoft nagware either: www.windizupdate.62nds.com.

Even then, Microsoft keeps trying to get the user to install it, with a large warning stating: "IMPORTANT: You've hidden important updates. You've asked us not to show you one or more high-priority updates but your computer might be at risk until they are installed. Restore them now."

So just how finicky is Microsoft getting about enforcing licence conditions? According to Jeff Putt, the system will hassle people who do have a licensed copy of Windows — but have installed it on multiple home PCs.

Dan Warne



TRAPPED MINERS GET IPODS

Our eyes nearly fell out of our heads when we saw the headline in *The Washington Post*: "Trapped Australian Miners Get iPods". Surely Apple wouldn't be involved in such a cynical marketing exploitation of the tragic Beaconsfield mine collapse?

"Oh, no, we had nothing to do with it," said Apple Australia marketing director Rob Small. "It was a nice story, but it was their local community keeping them nourished and cared for — and it was them who provided the iPods."

Apple said the iPods passed easily through the 90mm tube leading through 12m of solid rock (alongside medicine and life-saving food supplies).



Want to nominate a dumbest moment in tech?

Send an email with the subject line "Dumbest Moments" to dwarne@apc-magazines.com.au. All correspondence becomes the property of APC.

THE SECRET iLIFE OF MICROSOFT

Is the Vista team stealing ideas from the Mac OS X team? Or vice versa? This battle is likely to rage long past the point when Windows Fiji and Vienna (and other Windows successors) come to market.

Somewhat surprisingly, no-one seems to be asking an equally provocative question: is Microsoft planning to take a page from Apple's book and build an iLife add-on package for Windows?

Apple is hardly the only company looking to capitalise on the digital lifestyle concept. Microsoft chairman Bill Gates has made the digital lifestyle/workstyle buzzwords part of just about every keynote address he has given in the past three years.

But — does Microsoft have the goods to make good on the buzzword? Increasingly, it's looking as if the Redmondians are building

a stable of apps — like iLife — that are aimed at creating, manipulating and storing digital content.

In Microsoft's iLife equivalent (let's call it mLife for giggles):

- Urge — a digital music service Microsoft is developing with MTV;
- "Warhol" aka Windows Live Video — a video sharing/subscription service;
- Windows Movie Maker — which is currently part of the Windows/Vista OS;
- Windows Photo Gallery and Microsoft "Max" — two programs for digital photo storage/manipulation;
- "Monaco" — Microsoft's supposed GarageBand killer — music-creation program.

Will Microsoft decide to unbundle from Windows components (like Movie Maker and Photo Gallery) in order to make them part of a separate product/services bundle more akin to iLife? Seems like a no-brainer to me. Doing so would give the company another opportunity to earn new services revenues.

But marketing mLife as an iLife wannabe would be a mistake. Microsoft is already entrenched in fighting its reputation as a non-innovator. Instead, Microsoft needs to find a way to push its high-volume, low-price expertise into the creative/content-creation space, in such a way that doesn't scream "Mac knock-off".

Is there an mLife in Windows users' futures? We'll soon find out.

Mary Jo Foley is the editor of Microsoft Watch (www.microsoft-watch.com). She sounds off exclusively for APC on Windows each month.

WindowsWatch





inbrief



WI-FI CARDS FOR ANY CAMERA

A company called Eye-Fi says it plans to make flash memory cards with Wi-Fi built in, so that files can be transferred from any camera to a PC. The camera supplies power for the Wi-Fi via the flash memory card — but doesn't have to have firmware that knows anything about Wi-Fi. Eye-Fi has not as yet announced a release date or pricing.

ONLINE AUCTION INSURANCE

Accenture has prototyped an eBay insurance system where you'll be able to pay a small fee to "insure" (and guarantee) that you get the minimum price you want for an item you're selling. The Online Auction Price Insurance system works by monitoring the final sale price of all eBay auctions, which allows a risk — and insurance premium — to be accurately calculated. The system is currently not yet publicly available.

SKYPEIN COMES TO AUSTRALIA

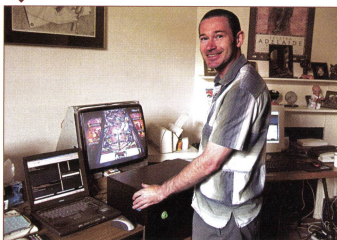
Users of the Skype VoIP chat software can now rent an Australian phone number that will connect incoming callers directly to the Skype program on their PC. A 12-month subscription costs 30 Euro (AUS\$50). A three-month subscription is also available for 10 Euro (AUS\$16).



Does MacGyver know Wallace has raided his supply cabinet?



"Just think of all the milkshakes I can buy now that the pinnies are free!"



All photos: Clive Specterby

Extreme geek

Wallace McGee: pinball wizard

South Australian programmer Wallace McGee spent his formative years trying to stop his balls from going down the drain.

Wallace's obsession with pinball started as a \$4-per-week habit — such was the extent of his paper-round money as a 14-year-old.

Occasionally he'd be forced to make the tough decision between buying a bag of chips or playing a few more rounds on the fish and chip shop's pinball machine.

He got so good at it that "a single 20c game could last for an hour with all the free games and extra balls." And, he says the flippers felt like an extension of his hands.

When Wallace realised he'd poured about \$1,000 into the machines over the years, he decided there must be a better way. On his 40th birthday, he went the whole hog and hired three pinball

machines for his lounge room.

When he chanced upon the powerful pinball simulation software Visual Pinball, it was like all his Christmases had come at once. But playing by keyboard was like driving a car with a mouse.

He found an old keyboard, used some left-over speaker wire and wood from a bookcase and hacked together a real pinball machine front-end (with genuine flipper buttons). The whole rig, including nut and bolt plunger with tap base and spring, black contact and second-hand VGA monitor cost him a paltry \$86.

He didn't have a wiring diagram for the keyboard, so he used the old faithful Windows Notepad to test all the keys on the keyboard (and

measure the electrical output of the keyboard for each key).

"Why was I confident I could do this? Well, when I was trying to play games on my C64 and needed a joystick I could not afford one — so I wired one up using a block of wood, speaker wire and paperclips," he explained.

Don't assume Wallace is just an agile gamer and fearless amateur electrician though. To round out his APC Extreme Geek qualifications, he revealed that he has programmed an entire multi-user virtual-world called Creative Object World (COW) (see www.wolispac.com/cow).

Congratulations Wallace, you are one hard-core Extreme Geek.

Dan Warren



HOW GEEKY ARE YOU?

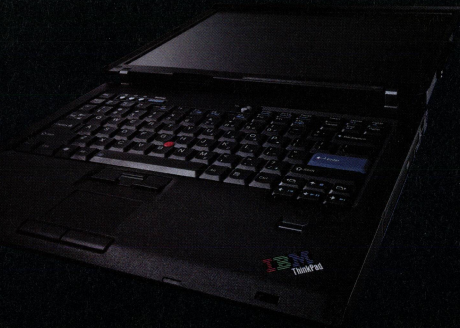
Have you wired up your car? Shared your home media library with five family members in three states? Made a 16 terabyte file server? If you've done something interesting with computing technology, APC wants to hear about it. Email a description of your project to dwarne@apcmagazines.com.au and include photos (we need at least one of you pictured with your gear).

This month's Extreme Geek wins a copy of DesignCAD 3D MAX Version 16, the most powerful release ever. It's fast and easy to learn, and AutoCAD

2005 DWG compatible. The new underlying CAD drawing engine is considerably faster, and more robust. Create more complex 3D objects without any slowdown in performance. As a bonus, our Extreme Geek also wins a copy of the DesignCAD 3D Max Version 16 Training CD to use with the DesignCAD 16 Max software. Information on DesignCAD products can be found at www.mindscape.net.au



Lenovo recommends Windows® XP Professional.



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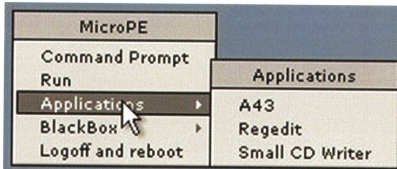
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●quotefile



Even Michael Dell is walking around with a Samsung notebook. Even though it's a Dell notebook, it's a Samsung notebook.

Kurt Jovais, GM Corporate Marketing, Samsung Australia, reflects on the shared production lines of computer manufacturing.



Bill Gates' requests for a simpler Windows interface had some unexpected results.

Windows XP in just 17MB?

While Vista gets larger and later, Windows XP is getting smaller and stranger.

A group of dedicated hackers has created a bootable Windows XP image which weighs in at a minute 17MB in size. By comparison, Microsoft's stripped-down Windows Fundamentals for Legacy PCs, a cut-down version of XP due for release in June 2006 (designed for use by companies who don't want to spend a fortune on Vista-capable hardware upgrades — but who also don't want to get stuck in a nightmare no-support scenario), still requires 512MB of available hard drive space (and 1GB is recommended).

However, before you race off to populate a few USB sticks with

emergency recovery images, there are a few limitations.

The MicroPE environment (see www.911cd.net/forums/index.php?showtopic=16528), which makes the 17MB image possible, was created by 21-year-old Danish hacker "Draugen", who used the freeware Batchter scripting system and BartPE boot image builder.

However, in this minimal form, XP will only boot from a CD-ROM drive in a 640 x 480 resolution (and requires a relatively ancient PS/2 mouse). It also only provides a command-line interface, although freeware shell environments such as as bblean are supported. Incorporating basic networking

support adds another 10MB to the image — and additional scripts are required to run any applications.

Some of these restrictions are due to the BartPE environment, which itself only allows access to basic Win32 and I/O functions. Microsoft offers its own tool for building custom Windows boot systems, WinPE, but that product is limited to volume licensing customers and doesn't offer a graphical user interface (while BartPE does). Whatever tool you have access to, you'll also need a Windows install CD (a necessary anti-piracy measure) to create any of the images.

Angus Kidman

Dream System

Multi-screen digital nirvana

Want to watch six DVDs while you deal with your email, surf the web, get live stockmarket updates — and still dip into your current World of Warcraft game?

9X Media's X-Top Extreme 10 LCD array is the answer to your prayers. Machined from high-grade aluminium, the rack holds ten 17 to 40in monitors in

a wrap-around configuration. Slim bezels and controls on the back of the panels deliver the full screen real estate you need. And, if you need more space later, the rack is expandable to 64 screens.

An X-Hub remote control provides centralised and integrated control (and access to popular data bus,

AV and wireless technologies, including Bluetooth, FireWire, USB, MP3 and DVD).

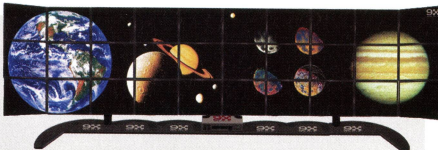
The company counts NASA, the US Navy, Boeing and CSI: Miami among its customers. They're meeting their gaming needs — why shouldn't you?

There's only one catch. The X-Top Extreme will set you

back US\$32,538 (for 17in) or US\$79,154 (for 40in) (postage and packaging from Los Gatos, California not included).

You could save money on peripherals, though. The X-Hub includes an integrated DVD player and burner.

Tim Gaden



Lenovo recommends Windows® XP Professional.



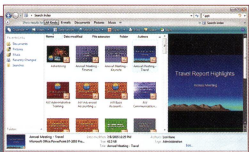
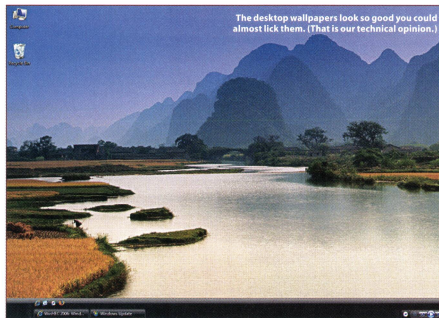
AND THOSE ABOUT TO BE.

You need to think about your critical path, not your computer's critical errors. The Lenovo™ 3000 N100 notebook worries about itself so you don't have to. So it has a virus recovery button. It updates its own software. It has an Intel® Core™ Duo Processor. And while its features stand up to the big boys, you won't have to pay like the big-boys do. It's a new kind of computer for a new kind of world. **New World. New Thinking.™**

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Vista Beta 2

Microsoft has lifted the wraps on Windows Vista Beta 2. Dan Warne got his hands on the installer DVD.

Beta 2 is more highly polished than earlier betas. It's not available yet for public download — that's coming soon with the "Community Technology Preview 1" — but, unfortunately for Microsoft, it'll no doubt be on file sharing networks faster than you can say "BitTorrent".

The new beta includes user interface refinements that we haven't seen in earlier Vista betas. Live taskbar thumbnails are one GUI enhancement that actually boosts usability (see "What we like about Beta 2" for more).

Something that is obvious in Beta 2 is that Microsoft is doing a lot of work on tuning performance. It uses flash memory, such as a USB memory key inserted in your PC's USB slot, to cache paged-out memory, which can be retrieved much faster than from disk.

According to Microsoft, "SuperFetch" doesn't just look at what programs the user is using often; it actually bases its decision on what to store in the flash RAM

based on commonly accessed data that has been paged to disk in the past. Data is encrypted using the practically unbreakable AES128 for security, and also compressed, giving you, for example, between 1GB and 2.5GB of storage on a 512MB memory key.

Microsoft has also finally recognised that Windows chugs the disk a lot and thus implemented what it calls "prioritised I/O". Matt Ayers of Windows Performance Group said that Windows had given programmers the ability to prioritise CPU tasks for a long time, but until now there had been no prioritisation of drive read/write requests. As a result, booting a PC with multiple programs trying to load at once or trying to switch programs (involving swapping pages of memory from disk to RAM)

while running an antivirus scanner could cause a PC to grind. Now, programmers will be able to tell Vista that their I/O task is low-priority (ideal for virus scanners or file copy operations), allowing important I/O to continue uninterrupted.

In Microsoft's demo, loading a set of four applications went from 36.6 seconds to 99.4 when competing full-priority I/O tasks were running. When those I/O tasks were run at low priority, the apps only took 43.1 seconds to load.

DO YOU REALLY WANT TO DO THAT? ARE YOU SURE? REALLY?

One of Vista's current problems — which Microsoft has acknowledged and promised to fix before release — is "confirmation overload". When we tried to delete a Firefox

Document preview in Explorer: Now that could actually be useful. What was Microsoft thinking?

Photo viewer. A close cousin of Apple iPhoto and Google Picasa. At least there's a way now to crop, resize and work with photos built into Windows.

PROPRIETARY STANDARDS GALORE!

A big part of Microsoft's strategy with Vista (not surprisingly) seems to be lure customers into an ecosystem based around Microsoft formats, protocols and standards.

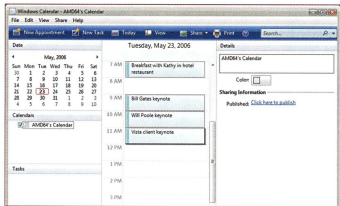
Windows introduces the XPS file format, which for all intents and purposes is a Microsoft version of PDF. Although PDF has a big head start in the marketplace, Microsoft includes XPS viewing capabilities in Internet Explorer 7 and it's the new printer spool file format for Vista (which means printing an XPS file involves minimal delay before it is sent to the printer). Microsoft has signed up many printer makers to



SOMETHING OBVIOUS IN BETA 2 IS THAT MICROSOFT IS DOING A LOT OF WORK ON TUNING PERFORMANCE



No really, we actually do want to delete that icon. Seriously.



Microsoft Calendar: It's suspiciously like Apple iCal, but that's not a bad thing. At least now there's a decent calendar for home users who don't need Outlook.

build XPS printing natively into their printers. XPS is completely royalty-free, too, so at some point in the future, printer makers will no doubt consider dropping Adobe PostScript compatibility, along with this hefty licensing fee. What's in it for Microsoft is the tie-back to Windows." (i.e. customers will prefer Windows for all their PCs as it is the ideal platform for XPS creation and reading.)

Microsoft also seems to be trying to own the wild, wild web again with a reinvention of CSS, the language used to describe the formatting of web pages.

It's pushing for web site developers to build sites using the Windows Presentation Foundation, a way of making web pages that will hook directly into Vista's graphics system.

The end result is web pages that Windows itself renders rather than the browser. This will lead to sites that feel more like software than a web page.

Conspiracy theories aside, for companies with a fleet of PCs running totally on Microsoft software end-to-end, XPS and WPF may be a big help. You'll no longer have to argue with your boss about why you need a \$500 copy of Adobe Acrobat to make PDFs (and WPF may allow some interesting web sites to be developed with software-like functionality). And, to be fair to Microsoft, if you use Microsoft Office 2007, it can actually create PDFs as well as use Vista's inbuilt XPS creator. Adobe must be spewing. Microsoft says it gets 120,000 requests a month for this feature. bit.ly

WHAT WE LIKE ABOUT BETA 2

START/SEARCH MENU

Search is pervasive throughout Vista Beta 2. You can now search your whole computer, not just the contents of the Start Menu. via the search box on the Start Menu. Effectively, the Windows key becomes a search key, because the instant the Start Menu is up you can start typing your search. Very nice. "Virtual Folders" are now called "Saved Searches", but despite the name change, you can still have them as a shortcut that appears as a folder.

XPS DOCUMENTS

Microsoft's new XPS format is designed to compete against PDF. It's a royalty-free open format, so anyone can make an XPS reader or creator. However, the fact that the XPS document writer is included in Vista and the reader is IE7 means that, unfortunately for Adobe, no-one's going to have to shell out \$699 for Acrobat Professional anymore. Then again, Microsoft obviously has a way to go yet to get the XPS writer right. On the left (below) is how the PowerPoint file was supposed to look. On the right is

the XPS version, created by Vista. Um, ok. We'll stick with Acrobat for now.

ALT+TAB GOES 3D

We never thought switching programs could become such a smooth and seductive experience. Press Alt+Tab and you get a glitzy up version of the Alt+Tab you know and love; this time it has thumbnails of open windows rather than program icons. Press Win+Tab and you get an amazing flipping effect for your windows, a bit like a rolodex (but less daggy and less likely to be found on a used-car salesman's desk). According to Microsoft, only 10 per cent of Windows users use Alt+Tab anyway, so it has added "taskbar thumbnails" for when you hover your mouse over the taskbar.

MEDIA CENTER

Every version of Vista except for the Basic version comes with a pleasantly revamped Windows Media Centre built in. It now has an iPod-like interface for the whole menu system (navigation is now done left-to-right rather than going "in" to a section) which does make a significant difference to its ease of use.



The PowerPoint presentation before it was mangled by the XPS writer.

The PowerPoint file after enmangement.



Alt+Tab now has window thumbnails.

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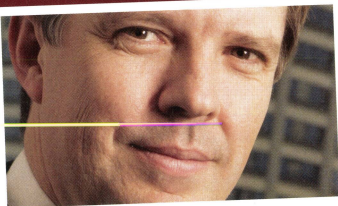
Your notebook is your life. Drop it and you could lose everything. That's why it has a magnesium alloy rollcage.

THINKPAD Z60

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75468 61617

the creators **Paul Twomey**

ICANN is the international body that manages the assignment of internet names and addresses. Adam Turner talks to Paul Twomey, ICANN's Australian president and CEO.

A telegraph operator in north Queensland during the dark days of WWII, Arthur Walker worked late into the night sending cryptic messages across the darkness.

As station master of Mackay railway station, Walker was transmitting an urgent Morse code order to entirely clear the tracks across Queensland's north. No reason was given. While some may have seen his role as little more than passing messages, Walker knew it was far more important than dashes and dots. What he didn't know was the Battle of the Coral Sea was raging and American troops were rushing north to prepare for a possible Japanese invasion.

Walker led "an ordinary life extraordinarily well" says his grandson Paul Twomey, who today is responsible for administering the ones and zeros of the Internet as head of the Internet Corporation for Assigned Names and Numbers. ICANN manages the Domain Name System (DNS) that lets computers find each other on the internet.

Twomey may move within the upper echelons of the world's internet intelligentsia and technocrats, but he has a very

broad background, with a PhD in International Relations from the University of Cambridge. He has worked for one of the world's top consulting firms, advising the world's corporate and government elite and has run Australia's Trade Commission, served as the Federal Government's chief technology advisor and founded a high-tech incubator to support Australia's fledgling technology startups.

Such holistic experience was beneficial for Twomey's role as CEO/president of ICANN. "I think one of the reasons the board approached me to be president of ICANN was because they saw that ICANN was getting itself more embroiled in broader political issues," he says.

ICANN's recent decision to deny a .xxx top level domain name for adult content is one example. Twomey is adamant the decision was not due to political or moral objections, but rather to concerns over ensuring those who register .xxx domain names complied with contract obligations to abide by applicable pornography laws.

"We got a lot of feedback from a diverse group of 300,000 or so. Emails from Christian right

organisations in the United States through to receiving a letter from Larry Flynt from *Hustler* saying he didn't like it," Twomey says.

"What it came down to was how would you actually have compliance for every country in the world for all of the web sites under that top level domain? We just thought that undertaking in the contractual terms wasn't going to be achievable."

The threat of the internet splintering, as countries attempt to censor content or preserve their own culture online, is another key issue for ICANN. While the introduction of top level domain names in non-Roman characters will reduce this threat, content is a more important issue, Twomey says.

"There is a certain perception that if you get an internationalised domain name then you're going to drive more traffic because it's in your language. What drives traffic is content, so the real challenge to preserve culture is to get the content up."

Twomey was born in Dalby, Queensland, in 1961; the son of school teachers who were the first in their families to complete high school. As such, he was brought up

with a strong ethic of "pulling oneself up by your bootstraps through education". It was something he took to heart; earning a Bachelor of Arts (First Class Honours, majoring in history and law) from the University of Queensland and a Master of Arts (Political Science and International Relations) from Pennsylvania State University (plus the PhD in International Relations from the University of Cambridge).

Whilst studying, Twomey spent much of the 1980s working in the Queensland Supreme Court and for refugee agencies — helping people from East Timor and Cambodia. He was also a member of an Australian mission to a UN Summit in New York on disarmament and development. In 1989, living in London after completing his PhD, Twomey's direction changed and he spent the next five years working for the global consulting firm McKinsey & Company, focusing mostly on telecoms and deregulation in Australia and Asia.

With McKinsey's on your resume, it's often said, you can go on to do anything — and Twomey was no exception. In 1994, he was



PEOPLE WHO COME FROM A WORLD OF COMMAND AND CONTROL LOOK AT THE NET AND TRY TO IMPOSE THE SAME SYSTEM

headhunted to become executive general manager of Austrade (the Australian Trade Commission). He initially focused on strategic development and later on operating Austrade's network throughout Europe. In 1998, he became head of the newly-formed National Office for the Information Economy (NOIE) — advising the Federal Government on issues of technology. Twomey resigned in 2000 to move into the private sector, after which NOIE was gradually divested of responsibility. It was eventually replaced by the Australian Government Information Management Office, which was in turn subsumed by the Department of Finance and Administration.

It was "time to get back into the private sector", says Twomey, and NOIE was entering a new phase which looked at the time like it would require a commitment of

several more years. Meanwhile, he had already begun his association with ICANN, working on the original white paper process that led to its founding in 1998. In 1999, he became first chair of the ICANN Government Advisory Committee (GAC) which served as the organisation's liaison with world governments. In 2000, before leaving NOIE, Twomey was appointed Australia's special representative for the internet and ICANN.

He says the mid '90s "was the period when there was a push for the whole liberalisation of the economy and trade so that was really interesting to me. I actually had an office in Melbourne with Evan Thornley and an office in Sydney with Charles Conn. Evan left to found LookSmart, Charles to found CitySearch and me to join the Government. Oh well!

I don't bemoan the path I took but the other two certainly made more money."

Instead, Twomey got to tell governments the role that they and economic forces should play in influencing new technologies. He told Australia's government ministers to view Australia's take-up of technology as the second round of micro-economic reform. "Those with a vested interest often push for government intervention to help new technologies gain a foothold, but this is not always the best role for governments to play.

"We need to adopt the right policies in terms of allowing the technologies to flourish, not putting too many barriers in their operations, pushing for their penetration and talking them up in the way the previous government — and this government — had talked up culture," Twomey says.

"For instance we had a lot of pressure when I first joined NOIE to set up a national Public Key Infrastructure for secure transactions. The more you discussed it, the more you realised it wasn't a technology issue but a business issue. It was about shifting the risk back up the chain to the government. People said to me the government must play the same role in the PKI as it does with the banking sector, and I'd say well, have you people not been reading policy for the last ten years? The governments in Australia have

moved away from that role — you're talking about a government assuming a risk model that's simply just not palatable. I think actually we ended up with the right outcome."

Issues of government regulation are still high on Twomey's agenda at ICANN, such as dealing with those who mistakenly believe ICANN controls the internet and therefore should regulate it.

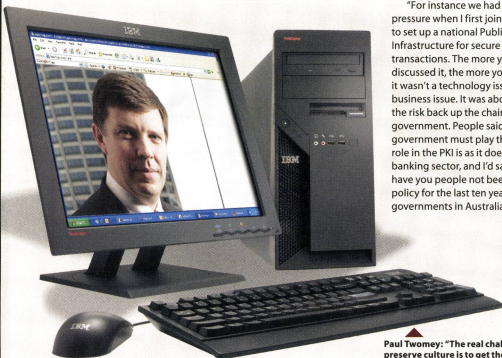
"People who come from a world of command and control look at the internet and try to impose the same command and control systems that they've been able to impose elsewhere," he says.

"These are not just political types. You see it, to a degree, in some civil society groupings and you certainly see it in some of the telcos and other business sectors."

Scholar, economist, technologist and entrepreneur, Twomey wears many hats, but when he starts talking about ICANN policy, he switches to the measured tone of a bureaucrat. It's not that he's being difficult or evasive, it's just that years of moving in circles of power have taught him to choose his words carefully. Whether it's in Canberra, Washington or Brussels, you don't make it to the top without knowing how to play the game.

All of these skills will be called upon as he navigates ICANN into a future fraught with conflict over whether the internet is more than the sum of its ones and zeros.

"We need to keep pushing the distinction between issues to do with the interoperability of the technology itself and issues that emerge from the content that's carried on it. That will continue to be one of the great fights for at least the next decade. It is going to be a very interesting time in the history of the internet." □□□



Paul Twomey: "The real challenge to preserve culture is to get the content up."

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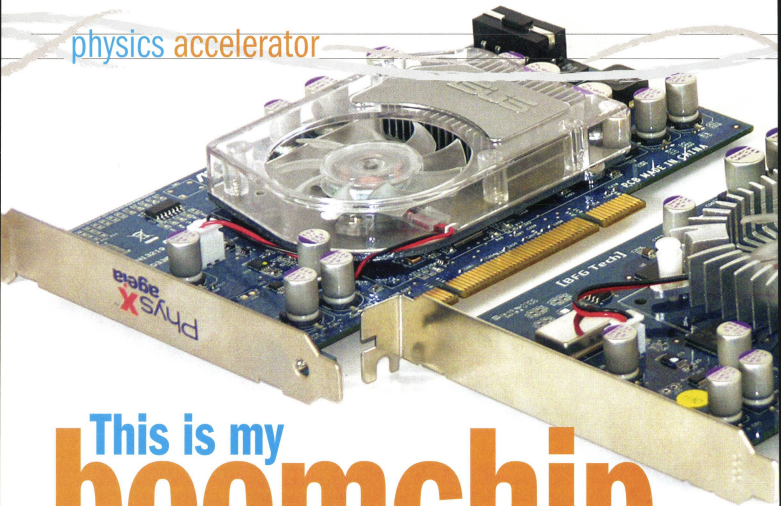
Takes no time to set up. Can save time by updating its own software. It's protected with virus recovery software.



N100 NOTEBOOK

Connects to wireless networks effortlessly. Features integrated fingerprint reader and integrated camera on select models.





This is my boomchip

As the first physics acceleration chip hits the market, John Gillooly looks at why physics will lead to faster PCs.

Games and 3D modelling drive a large segment of the graphics market. The latest games are some of the most computationally intensive activities that you can throw at your PC — and even the fastest systems available can still be slowed down by them. Most of the bottleneck comes not from the graphics card but from the CPU and memory subsystems. This means that game developers often have to tightly control CPU usage by a game, which in turn has limited the sophistication of artificial intelligence and physics models used in games.

While most appreciate the concept of AI, in-game physics models are less understood. Basically, a physics model or engine is a collection of algorithms governing how players and the game environment interact. Such code has been around for ages — but its gameplay-altering potential has only just started to be tapped.

Ever since they first used a toilet in Duke Nukem 3D, gamers have clamoured for more

interaction with the environment. We've become used to standing in a beautifully modelled world — yet unable to interact with it in more than a rudimentary way.

With the launch of the PhysX PPU (Physics Processing Unit), AGEIA aims to drag the industry forward in leaps and bounds. Not only does the existence of a dedicated processor for physics enable more complexity in environmental interaction, it also frees the CPU to dedicate more time to AI and other game routines. In order to do this though, AGEIA faces big challenges in convincing a sceptical audience of hardcore gamers that purchasing a PhysX card will make their in-game experience better.

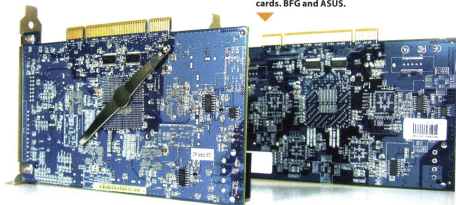
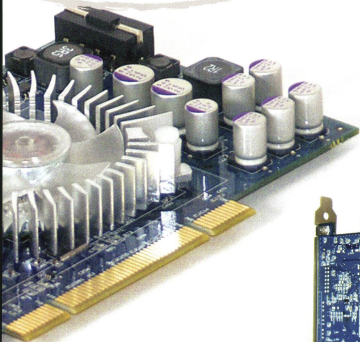
It's not going to be easy. There are several near-insurmountable roadblocks already ahead of AGEIA, not the least of which is the recent emergence of a competing physics engine that uses Shader Model 3.0-based video cards to do the calculations. To appreciate the challenges, we need to first step back and look at what a physics model is — and why it has already been a major driver in the evolution of gaming.

THE UNBEARABLE LIMPNESS OF BEING

In a time before 3D graphics, games were constructed of sprites. Interaction with the environment largely revolved around getting two sprites to collide. When Mario mistimed a barrel jump in Donkey Kong (or you landed a successful sweep kick in International Karate +), the computer calculated that the two sprites had collided and acted accordingly.

Once the first 3D games emerged, this philosophy carried through. A game like Doom, while set in a fully realised 3D game world, was still populated with sprite characters. If one fell under your crosshair, you'd shoot it and get a hit animation. Again, this was simple collision detection at work. Games like Duke Nukem 3D evolved the concept further and allowed limited environmental interaction. This was split between useful abilities (opening vents and doors) and more cosmetic ones (using taps in a bathroom, turning a movie projector on and off).

From this grew a desire among gamers for deeper interaction with the world. However, the



There are two companies producing PhysX cards. BFG and ASUS.

simple fact of the matter was that, despite the revolution that was brewing with 3D acceleration, the humble CPU just didn't have enough grunt or memory to advance collision detection beyond a rudimentary level.

For a long while, the slow pace of CPU advancement kept physics models focused on character animation. The move to polygon-based characters from sprites was followed by a shift towards a technique called skeletal animation. In this, a character is built over the top of a simplified skeleton. Rather than hand-animate all possible character movements, the animator sets limitations on how each joint in the skeleton can move, saving development time (and allowing more natural animation).

Movement of character skeletons is governed by games physics models. Over time, this has evolved into the most recognisable and widely used implementation of in-game physics: a technique called "ragdoll animation".

Ragdoll animation's main objective is to cause in-game characters to die better. Essentially, it uses the skeleton built for animation to restrict movement of the bones to physically possible positions. This means that when an explosion goes off, the player model will fly through the air and slump realistically on



WITH THE LAUNCH OF THE PHYSX PPU, AGIA AIMS TO DRAG THE INDUSTRY FORWARD IN LEAPS AND BOUNDS

environmental objects. The name "ragdoll" refers to the floppy look that it imposes on the characters. While improvements to vertex shading units in graphics cards have allowed developers to offload some of the ragdoll calculations, this can still be incredibly processor-intensive when there are large numbers of ragdoll models on-screen.

INCREASING THE CHAOS

Ragdoll animation is now a well-established part of games and, while physics acceleration has the potential to improve gameplay, it is the way the environment interacts with itself that will truly show the power of game physics.

As a hypothetical example, let's take an office, modelled in a first-person shooter game. Traditionally, while you could walk into the office and around the furniture, interaction would be limited to say, turning on the computer screen or opening a safe; all other office furniture and paraphernalia would be static, frozen in place.

While games slowly evolved to allow for simple interaction, such as chairs being moveable, it wasn't until Valve Software released Half-Life 2 that such rooms came alive. In the game, every item in the room is capable of independent movement. Just as in real life, a computer isn't strangely welded to the desk; if you bump it, the keyboard, monitor and system could all fall over. Throw a grenade into the room and complete chaos ensues as objects fall and bounce off each other realistically.

With this implementation of in-game physics, Valve did more than just demonstrate that the world could be made more believable and dynamic, it showed that physics could become a cornerstone of the game design itself. Several puzzles in Half-Life 2 relied on the physics model underneath (and would have been unachievable without dedicating CPU time to physics calculations).

This shows where the potential strengths of hardware physics acceleration lie. Physics can

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▲ This Cellfactor Demo sequence shows what is possible with physics acceleration in the future.

be (and is) used in-game to enhance eye candy. This involves calculating where debris flies in an explosion — or the way smoke floats up from a fire. It makes the game look more believable but has little impact on the actual gameplay. This is the sort of code that is suited to acceleration by both dedicated physics hardware and graphics card-based solutions.

Half-Life 2 is an example of deep physics, where it is intrinsic to the gameplay. In such a game, not only does the debris fly from an explosion in a realistic way — it can pile up and block your path or even provide a hazard to your health. It is this kind of physics model that could be taken to the next level with dedicated hardware acceleration.

RAIN OF DESTRUCTION

Deep physics are being explored in one of the few PhysX-enabled titles currently playable. Cellfactor is its name, an fps set in highly interactive environments. The single level demo available does more than any other title to show off the potential of AGEIA's hardware.

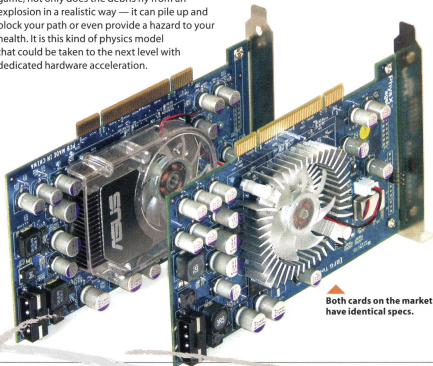
Unfortunately, underneath the debris-filled chaos of Cellfactor is a pretty rudimentary and uninspiring game. While it will certainly be

a title played by those with PhysX accelerators, it is far from being a hook to get people buying the hardware. We also found that the game ran poorly on lower spec systems — regardless of the PhysX accelerator — which does not bode well for those looking to extend the life of their current system through PhysX.

Besides Cellfactor, the other big title with PhysX support is Tom Clancy's Ghost Recon: Advanced Warfighter (GRAW). This is more indicative of the implementation of PhysX that we will be seeing in the near term. It actually uses the competing Havok SDK for the majority of in-game physics calculations. However, PhysX is overkill to provide for more realistic explosions and particle effects. This leads to a minor graphical improvement in the game; however, it is purely an eye-candy implementation and not something that makes a compelling argument for AGEIA's accelerator.

ASUS also provided us with a PhysX-powered demo of Switchball, the full version of which features a handful of PhysX-only levels. This quite charming puzzle game does not have anywhere near the intensity of Cellfactor's debris storm, but rather uses physics in a more subtle and limited way. It involves rolling a ball through a series of obstacles, with realistic physical interaction between the ball and the environment central to gameplay.

What this title does highlight is the relative lack of sophistication used when rendering liquids (fluid dynamics simulation is another touted strength of a dedicated physics processor).



▲ Both cards on the market have identical specs.



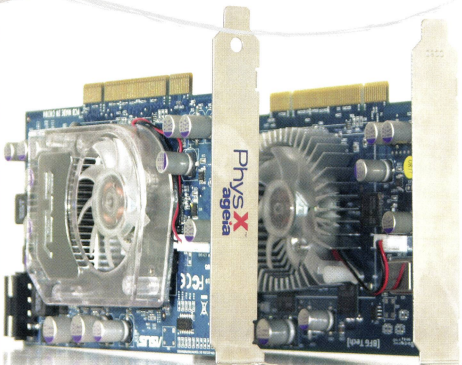
Switchball shows limitations with water rendering.

Also, noticeably at times in Cellfactor, liquids appear too viscous and blobby. Our suspicion is that this is down to the simplistic graphical rendering of the liquid, but it ends up looking out of place in the titles we have seen.

While the PhysX-only nature of Cellfactor and Switchball mean performance evaluation is more gut feeling than benchmark-based, our impressions were that you still need a powerful system to work in conjunction with the PhysX chip. Even mid-range systems struggle to render the huge amount of on-screen debris in Cellfactor. Once more titles appear with PhysX support, hard benchmark numbers should be attainable.

THE ROAD AHEAD

Therein lies the crux of AGEIA's challenge. Unlike 3D acceleration, the move from eye-candy physics to deep, intrinsic-to-gameplay physics is not a scaleable process. If gameplay revolves around the type of in-game physics delivered by the PhysX processor, it won't be achievable without one. If it is achievable using, for example, the power of a multicore CPU,



UNLIKE 3D ACCELERATION, THE MOVE TO DEEP, INTRINSIC-TO-GAMEPLAY PHYSICS IS NOT A SCALEABLE PROCESS

then this raises big questions over why anyone would need an expensive add-on card.

Compounding this is the move by the incumbent physics engine, Havok, to incorporate support for Shader Model 3.0 graphics cards to accelerate physics effects. This is mainly focused on enhancing eye candy through added particle effects, rather than providing the deep physics. This would naturally be an inferior solution when compared to the more comprehensive PhysX approach, but this becomes a moot point if AGEIA can't break through with a killer application for its hardware.

To AGEIA's credit, it is throwing everything at making its hardware a success. Its engine is licensed free to game developers (as long as they add hardware PhysX support). Breakthroughs have also been made in getting

AGEIA's SDK working with Epic's Unreal Engine 3, which has been widely licensed for development of next-generation games (not only on the PC, but also on the Xbox 360 and PlayStation 3 platforms). Further to that, reports from game developers so far point to the AGEIA SDK working wonderfully on Sony's Cell architecture, which could prove the back door it needs to PC success.

Because of the fixed hardware platform a console provides, PlayStation 3 developers know they can implement a deep level of physics. This opens up the viability of cross-platform titles that utilise Cell on PS3 and PhysX on the PC. If a big-name title like Grand Theft Auto 4 appeared — with physics intrinsic to its gameplay — the buzz around the console version could help transform its PC sibling into the reason to buy a PhysX chip. [B3T1C](#)

THE HARDWARE

There are two brands of PhysX cards on the market, BFG and ASUS. We have had engineering samples of both these cards in the APC Labs and used them in conjunction with the few PhysX-enabled titles on the market. It is important to note that, much like video cards, there is no difference between the two

brands of PhysX cards (beyond bundled software). Both use 128MB of memory, contrary to an earlier announcement that ASUS would be supplying 256MB versions.

Installation of the cards is a simple case of plugging it into a PCI slot, connecting a 4-pin

Molex connector and booting up. Drivers are available direct from AGEIA's web site and are updated regularly.

For more information on the retail products keep an eye on the BFG and ASUS web sites. www.asus.com.au and www.bfgtech.com



The biggest loser

As a long-term Linux user and advocate, *Matthew Overington* has a bone to pick with Linux distro managers and community leaders that contribute to package bloat.

One of my biggest gripes is the Linux community's desire to roll everything (bar the kitchen sink) into distributions. Those responsible for managing Linux builds have access to an enormous selection of packages, so it's tempting to add as much as possible — with the idea of giving users the choice of what to install. Though the logic behind providing complete flexibility is admirable, it's also flawed. After all, how many word processing applications do you really need? How many browsers?

SuSE Linux is a great example of package bloat. Years ago, I was blown away when SuSE moved to a DVD-based distribution. This was at a time when Windows shipped on a single CD. (It still does, but by applying updates and security patches, you'll end up juggling some discs and downloads).

SuSE's YAST (Yet Another Setup Tool) is a great installer and you do get some flexibility when choosing packages, but newbies are easily daunted by the enormous number to choose

from. Granted, you can argue that it's straightforward to choose what you need and install it as required when configuring Linux, but the sheer number of choices makes it difficult for the inexperienced user to sort the wheat from the chaff. Most newcomers I know start out by installing everything and taking some time to discover what they actually need. Later comes the inevitable reinstallation where

where a user had to manually configure each package, check dependencies, sacrifice a few sleepless nights in front of the PC and finally pray that everything installs correctly. Some of the application delivery systems like RedHat's RPM file packager and Debian's apt allow users to browse for software online, then download and install tools individually. It's simple — even for an inexperienced user — and it

ground up to suit specific tasks. A quick search at sites like www.distrowatch.com returns a list of distros customised towards a specific application or target market. Need a software firewall to install on a spare computer at home? No worries, download a copy of Astaro Linux (www.astaro.com) and start tinkering. What about a multimedia-oriented distro? That's been covered too — by Medialinux



THE LOGIC BEHIND PROVIDING COMPLETE FLEXIBILITY IS ADMIRABLE BUT FLAWED. HOW MANY WORD PROCESSING APPS DO YOU NEED?

they select only the packages they've found they need.

Fact is, there's no need to go to these lengths. Especially with resources like Sourceforge.net or freshmeat.net, where visitors are able to check out the status of a project and download anything that appeals.

KNOWLEDGE BASE

First timers aren't looking to run every Linux package possible, but instead should be able to rely on experienced users — those packaging the distros — to choose a selection of the best software and allow users to add packages as needed. Installation methods have come along in leaps and bounds since the bad old days

works. Given that most people using desktop Linux have access to an internet connection, there's little reason this model shouldn't prevail in the long term.

If you're looking for a simple Linux OS with no excess bulk or fat, I suggest you give Ubuntu, Knoppix or MEPIS a go. All three are stable, simple distros that offer an excellent blend of functionality and flexibility (without the excessive package bloat that plagues some of the massive commercial distros like RedHat or SuSE Linux).

As an extension, one of the more elegant features of the Linux landscape is that enterprising developers can customise an installation completely from the

(www.medialinux.org). In fact, just about every niche market is now being serviced by a group of passionate Linux developers tailoring their own solutions.

Though it's attractive to have a copy of everything you could ever need in one place, there's little need for bloated distributions to swallow gigabytes of hard disk space with applications you're unlikely to use.

Linux has been a daunting operating system for over a decade — a toy for geeks to play with, and not a serious computing tool. The popularity of cleverly designed distributions — like Knoppix or MEPIS — reduces the barrier to entry and benefits us all. bit.ly

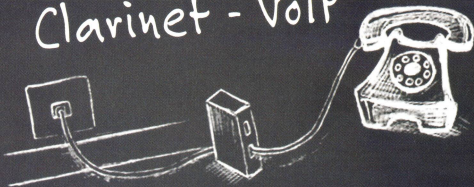


LinuxWindow

by
Matt Overington

Matt Overington is an operating systems specialist and former technical editor of APC. He specialises in interaction between Linux and Windows systems.

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CUA023



Search revolution

James Bannan gives a big thumbs up to the rebadged Search Folders in Windows Vista — is this the end of subfolder hell?

For home users in particular, Search Folders is going to revolutionise the way we manage our personal data — and I for one cannot wait. The promise is to organise your data more intuitively and not have to drill down numerous subfolders to get what you want. In earlier beta releases, this was called Virtual Folders — now, these are out and Search Folders are in.

HOW IT WORKS

The search itself is a standard query, leveraging off Vista's Windows Search Service which provides content indexing and property caching of files, email and just about anything else which has content or properties. When you run a search, Vista looks at its index and presents all the results within the constraints of the search. At this point, if the user goes to the File menu, there's an option to Save Search — this seems to have disappeared from the Organize

button though; you need to turn on Classic Menus. The custom search can be saved pretty much anywhere — C:\Users\username\Searches is the default. They look and feel like normal Explorer folders — all they are is an XML script of the defined search, bundled into a .SEARCH file (used to be .VFOLDER).

Search Folders have several properties which are going to make them very useful. First, you don't need to wander around looking for your

CONTENT DELIVERY

Try creating a search then navigating to the Search Folder, right-click and open it with Wordpad and you'll be presented with the underlying XML scripting. Obviously more complex scripts will produce more complex results, but the basic idea remains the same. This means you could actually create a search by going straight to the script; searching in Vista means users are still bound by the basic constraints of access and permissions

The big picture is that we could, eventually, get rid of network drive mappings. Instead, just deliver Search Folders straight to their computers. No drives, just content.

But before we get carried away with the possibilities, there are some things to bear in mind. Firstly, Search Folders show their best functionality when dealing with content which has descriptive and useful metadata. This represents a shift in workflow mindset. Users will need to know that it's now



THESE FEATURES OF SEARCH FOLDERS EQUAL SOMETHING VERY EXCITING FOR DESKTOP ADMINS — CUSTOMISED CONTENT DELIVERY

files — a Search Folder will display them regardless of their original location. Also, when you work with files accessed from a Search Folder, you're working off them from the original location (no copying to temp folders or any of that mess).

Second, because the folder is based on a dynamic script, every time a new file gets created which meets the search criteria, it magically appears in the folder. And third, personalised search folders are incredibly easy to back up — just copy the .SEARCH file somewhere safe and you're done.

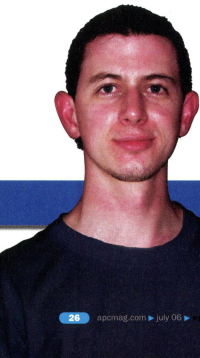
— the results won't include files in folders they don't have access to.

These two features are very exciting for desktop administrators — customised content delivery.

If a Search Folder is just an XML script saved as a .SEARCH file, then, as admins we can script however many searches we like (all customised for the local network) and deliver them to the user base via a desktop management system, or even embedded in the SOE. Searches can be specific or open-ended; users are still constrained by their network access rights.

much more useful to fill in the Author, Title and Date Modified fields in a Word document than to give it a 100 character-long descriptive filename within a 150 character-long subfolder.

The second thing is that we've been dealing with mapped drives for a long time, and the concept is firmly embedded in the psyche of most computer users. As exciting as the concept of delivering Search Folders straight to users is, it must be stressed that it will take a massive amount of re-education to make it a productively viable solution. [EDIT](#)



Hasta la Vista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.

Always Cool and Ready for Overclock



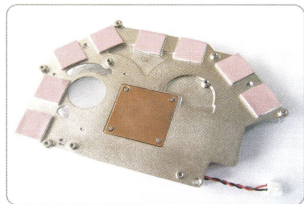
ASUS EN7900GT TOP Combine Explosive Performance with Innovative Features along with Peter Jackson's King Kong Right out of the Box

High-end graphics solutions and overheating concerns almost come hand in hand, especially when hardcore users try to tax the cards like there's no tomorrow. However, the recent introduction of EN7900GT TOP from ASUS has outfitted the cards with advanced heat pipe and memory cover designs that helps to keep the GPU and memory chips temperatures down to a bare minimum, while sustaining maximum performance capacity.

Performance is exactly the key in the development of EN7900GT TOP. With standard clock speed of EN7900GT at 450MHz (core) and 1.3GHz (memory), the EN7900GT TOP is capable of reaching 520 MHz (core) and 1.44GHz (memory) respectively. In answer to gamers' plea, the EN7900GT TOP also enabled overclocking function among a slew of exclusive innovations from ASUS, allowing users to milk every drop of power out of the cards for desired performance, and offering interactive gaming along the way. But wait, there's more! The series also come bundled with Peter Jackson's King Kong: the Full Edition Official Game of the Movie, for complete experience instantly right out of the box.

Heatpipes, heatpipes, heatpipes!

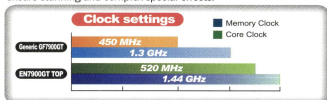
To offer stable operation to go with robust performance, the EN7900GT TOP specifically adopted heat dissipating pipes to sustain maximum GPU capacity. Furthermore, the efficient cooling design included memory covers to permit heat transfer directly from memory chips onto the heatpipes for faster and more reliable performance. The dedicated heatpipe is affixed onto the GPU with memory mounting pads that absorb heat away from the GPU and memory chips during operation. Effectively diffusing the heat by the enclosed fan, the result is a graphics card with unrivaled performance for ultimate video quality connoisseurs.



▲ Memory mounting pads divert heat away from GPU and memory chips.

Overclock for even better performance

Apart from hardware ingenuity, the EN7900GT TOP offers overclocking ability to satisfy hardcore gamers and provide top-shelf graphics quality. Capable of supporting high definition TV output and delivering industry's fastest anti-aliasing for ultra-realistic visuals, the EN7900GT TOP adopted Microsoft DirectX9.0 Shader model 3.0 to ensure stunning and complex special effects.



▲ EN7900GT TOP outperforms Generic EN7900GT significantly in clock speeds

Complete Gaming Experience

In addition to industry-leading specifications, the two graphics cards also incorporated exclusive innovations found only on ASUS solutions.

ASUS GameReplay: Practice makes perfect, and that holds true in gaming as well. For popular LAN (local area network) party team games such as Counter Strike and Unreal Tournaments, strategy is the key to victory. GameReplay records gaming action into MPEG4 video files so that teams can review all the moves and tactics to improve for the next tournament. The recorded files can also be used as screen savers or posted on blogs.

GameLiveShow: Just like people who share their lives and thoughts on blogs, expert gamers often want to show off their perfectly executed strategies and five-hit combinations. GameLiveShow is created to allow gamers to stream broadcast their gaming experiences live over the Internet. Other players can now go online to check out how those experts really do it.

GameFace Messenger: It is a user-friendly interface similar to those of the most popular messenger services to simplify the process of inviting multiple players to a gamefences (game conferences). Register, log on and start the fun. GameFace Messenger is as easy as the free messengers currently in the market.

Splendid Video Intelligence Technology: Built into the driver of ASUS graphics cards, Splendid detects activation and usage of video applications and automatically optimizes image quality for the best visual results. Splendid further provides five modes for best visual results in different video applications (Standard, Game, Theater, Scenery and Night)

By teaming up powerful graphics processing, unique gaming feature and innovative cooling design, ASUS has successfully created a video card that can do just about anything. Along with the red-hot game of the year "King Kong" shipped in the same box, this is certainly an offer no one can refuse.



Are you experienced?

Inexperienced users aren't the main problem for IT staff. Senior managers are. So claims one senior IT professional* from a Victorian government department.

He writes: "The real problem is people who ascend to senior positions in the information management field on the basis of skills unrelated to IT (or to any productive human endeavour, for that matter). I work as a data analyst in the health system, where it is well-documented that the IT budget is manifestly inadequate. Here's some examples of the health system's brains trust at work; my "mate" cops the brunt of it.

A NARROW PERSPECTIVE

A fairly senior manager in the health information field once asked my mate for a spreadsheet of data containing fields x, y and z... Upon receiving it, he angrily called to find out why he'd only been sent the first eight or so characters of each row of field x. My mate had to explain that columns in spreadsheets are resizable...

THE ZIPPER'S STUCK

Then there was the time when a manager was trying to send my mate a zipped file, but kept emailing him the wrong file. Eventually he rang her and she said (with considerable authority), "There's something wrong with my WinZip. It keeps swapping the files

over after I have zipped them." Barely able to conceal his amusement, my mate said, "Oh, it sounds like you have the WinZip file-swapping bug. This happens quite a bit. Ring your IT department; they'll come and reinstall it for you."

CLERKS

During a large data migration, a very well-paid hospital manager decided to migrate all the data from one hospital database to another... by generating mass paper printouts and paying a pool of clerks to re-key all the data back in through the new front-end. When suggested to her that she consider engaging the services of a DBA to do it properly, she said, "No... that sounds expensive. We'll pay the clerks overtime instead." That was four years ago. Money continues to be spent on this (fixing problems).

IT'S ALL ACADEMIC NOW

This next one — I stress — really happened! A university lecturer in health information management rang my mate and said, "I have to give a database management tutorial later today. You're a database expert aren't you?" "Yes. Actually, the DB in DBA stands for database." "Great! Can I ask you a few quick questions then?" "Um, yes... I guess." "Now databases, that's Pivot Tables and stuff isn't it?"

"Er... the server has just crashed. Can I get back to you...?"

THE P155 HEAD FAULT

Last but not least was the time a database server was found to be malfunctioning inexplicably on Friday afternoons, usually between 3:00pm and 4:00pm. The error report was an abusive phonecall from a user saying she'd just copied files across to a particular folder on the server, they'd vanished into thin air and could we please fix the ?@!ing server. We got to her desk to test the situation the next Friday afternoon and found no-one there. Strange. We waited. Eventually at 3:30pm she tumbled in the door. "Hi guys!" she bubbled garrulously. "You should come with ush down to the [insert inane Irish pub name here] for lunssh eassh Friday. It's grouse. They have \$1 beersh for regulars. You're here to have a look at this sherver problem, arnshoo?" "Actually no. We've worked out what it is. We've just come to tell you that it's a P155 head fault. Unfortunately, we can't fix it, but it's not a big deal and very easy to work around. Just ring us each Friday when it happens and we'll reset the server for you. It'll only take five seconds. Then, copy the file in again and you're done." [END](#)

* As with some other contributors to this column, this reader asked for his name to be withheld, to which we agreed (after verifying his identity).

WINNERS!

This month's published writer wins a Maxtor Shared Storage Plus 300GB drive valued at \$499. Use the MSS+ to back up all the computers on your Ethernet network and protect your critical business information. Schedule automatic backup protection, share files, and work more productively. More information at www.maxtorsolutions.com or call (02) 9369 3662.



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EndUser

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.

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it can survive anything.

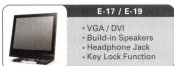
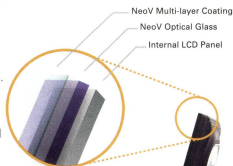


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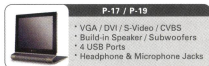
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considered for print publication. Please also include details such as invoice numbers and the names and details (if you know them) of the people you've spoken to about your issue. Phone details will not be published.



Think global, act local

Buying a new notebook overseas can come with its own set of problems, as Michael Rapkins discovered.

I am not happy with the quality of service that I am getting from Highpoint (Acer's repair group in Australia). On 14 January, I purchased a new notebook computer (TravelMate 8204 model) in Singapore with the International Travel Warranty.

On returning to Australia, my first attempt to use the notebook on the NIC LAN port met with problems — like not connecting properly to the network and it kept resetting the Send count in the Network window, indicating to me that there was a problem with the NIC port.

On contacting the Acer support, they put me through to the technical support (Highpoint) group who advised me to re-install the driver. They sent me the driver and closed the support ticket.

The driver they sent was incorrect (and for a Broadcom NIC, not the Intel NIC installed in my system). I found the correct driver on the UK Acer web site. I deleted and re-installed the device (three times) but it still refused to work.

I again rang Acer support who had to open another reference number. I advised Technical Support that their suggestion had not worked and said I wanted to take it to the repair centre to be looked at.

I dropped it into the centre (Brisbane Highpoint) on Tuesday afternoon and was advised it could take a week to be looked at. I was highly unhappy with this (as the Acer Warranty states a two to three day turnaround) but had no option.

I contacted the service centre a week later (7 February) and it had not been looked at.

I called support again on the 14th for an update and they could still not advise me of an ETA, but would follow it through and call me back. I did not get a call back.

I then called support on the 15th and was advised that the ETA was 22 February for the parts (and should only be half a day after that for the repair).

I called support again a week later on the 22nd for a status report. The parts had not arrived and they could not give me an ETA. Ridiculous! Why couldn't the parts division track these parts!

When I called again on the 23rd, still no ETA could be given! So, I called Acer support who sent an email to the service manager to call me. He rang me back but was unable to give me any date on when the parts would be in.

I called support the next day. They still could not tell me an ETA and said they would follow it up and call me back. No call was received.

Another phone call to support on the 27th. Still no ETA; looked up the parts system and no ETA.

On the 27th I called Acer Support Singapore (as this is where I got the notebook from). They advised that nobody had been in contact with them.

Their parts records showed they had stock of these motherboards. The same day, I rang Acer Parts Australia (which turned out to be Highpoint). They said they would check with the manager and get back to me. Again NO call back!

On the 28th I rang support. They advised that they now have an ETA of 17 March.

Four weeks for a repair or indication of when it will be ready! 17 March! Well — I will not wait that long.

Michael Rapkins
Bunya, Qld

Watchdog contacted Acer and invited it to respond to this tale of delays, false starts and unknown delivery dates. Acer responded within three days. Here's what it had to say about Michael's experience.

Dear Watchdog,
Unfortunately, this particular notebook model, which our customer bought in Singapore, is not sold locally here in Australia. Subsequently, we have experienced delays in getting the spare parts from overseas.

Indeed, whilst this case is already resolved and the notebook is ready to return to the customer, it's a good example of why it's always best to support the Australian economy... and buy your Acer product in Australia!

Neil Roberts
Managing Director
Highpoint Australia
(Acer Repair)



The Acer TravelMate 8204: not travelling too quickly, mate.

Apple: "See... It's your clothes. We like them, they look good!
But they're killing your laptop."



TAMING THE MACBOOK WHINE

My overall customer experience with the support provided by Apple — after the purchase of my MacBook Pro — has been extremely disappointing.

I purchased my 15.4in MacBook Pro from David Jones on 1 April 2006.

There are three fundamental issues with the product — of which I had no knowledge prior to my purchase — nor are the result of any damaged caused by me:

1. Warped display
2. Excessive static discharge (when charged)
3. Loud whining sound from right side of laptop (variable).

I would have returned the product immediately; however, I left the country for a business



I STRONGLY FEEL THE PRODUCT IS OF FAULTY CONDITION BEYOND THE NORM; TO SUGGEST REPAIR FOR A NEW PRODUCT IS UNACCEPTABLE

trip on 6 April and did not return until 18 April. I only noticed the faulty conditions from the 4th and 5th of the month — and did not have time to report the conditions until after my return on 18 April.

Apple's customer relations staff have denied my request for a replacement. I am not satisfied or in agreement with this decision; I am also dissatisfied with the repair option since I strongly feel that the product at issue is of faulty condition beyond norm; to suggest repair for a new product that I just purchased is not acceptable.

How can a brand new product have these key issues within a short period of time and the manufacturer

be not willing to replace the product? The entire experience has been frustrating. At one point, an Authorised Service Centre representative indicated to me that static discharge is caused by the type of clothes I was wearing. That is ridiculous. This kind of statement undermines the credibility of the quality of service provided.

As a new customer of Apple products, I am very disappointed and dissatisfied with the level and quality of support and service provided by both Apple customer relations and the authorised service centre.

Porendy Ung
Sydney, NSW

Unfortunately, problems with early models of Apple's MacBook Pro series are well-known. Watchdog took Porendy's concerns to Apple and invited the company to find a resolution to the problems. Apple responded to us with the following:

Dear Watchdog,

Apple has worked directly with the customer to address his concerns. As a result, we've advised him that a replacement MacBook Pro has been shipped and he will receive it next week.

John Marx
Public Relations Executive
Apple Australia

ZEN AND THE ART OF MP3 PLAYER MAINTENANCE

Andrew Cocker of Bellevere, Tasmania, contacted Watchdog with concerns about the cost of repairing a faulty Creative Zen Touch MP3 player, which he bought for his daughter two years ago at the cost of \$500.

The earphone connector on the player began to show problems after 12 months and failed completely when the device was two years old.

He took it to Dick Smith Electronics where he bought it and was told that it was a design fault.

He then turned to Creative Australia, whose technical support representative told him that the cost of parts, labour and freight

for the repair would be greater than buying the current model. "You might like to consider our latest MP3 player: Zen Vision M... a brand-new product with better features and function," the email suggested.

Andrew asked us: "Is that a disgrace or am I being unreasonable? I don't expect it to be replaced or repaired for free. But I don't think it is acceptable for Creative to say, 'tough, buy a new one.'"

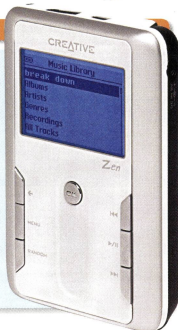
Watchdog took Andrew's concerns to Creative and invited the company to make a response to Andrew's concerns.

Initially, Creative suggested Andrew had contacted Creative Asia

instead of Creative Australia and that he should try to contact the local repairs centre.

However, the email Andrew received was clearly marked as coming from Creative Australia Support.

A second approach was more productive. Watchdog put it to Creative that a \$500 music player is not in the same class as a disposable camera that should be thrown away when it breaks. Creative agreed. Instead, Creative has assured Andrew that if he contacts Creative Australia's support services, Creative "would be able to repair or replace his unit at a cost of around 35% of the RRP as is our policy".





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Fill 'er up — or not? Is ink the new black gold? One reader thinks so...

GIVEN HALF A CHANCE

I own a Dell inkjet printer and run standard Dell cartridges in it. The cartridges do not last very long, so I complained to Dell. It was recommended that I buy "High Yield" cartridges (at extra cost). I was told this should approximately double the number of pages printed (with a same-size cartridge). I thus ordered some and wondered what wonderful new technology was able to double the output of a printer cartridge. I cynically started to think that maybe the standard cartridges were only half-full so, when my new cartridges arrived, I compared empty vs standard vs high-yield cartridge weights. It seems to me that the standard cartridge is only half-full (or half-empty, depending on your stress level). I believe that the ink cartridge business is quite lucrative for these large companies as it is — without needing to resort to these types of tactics. Is there nothing we can do? I'm all for capitalism, but maybe it should be law that cartridge cases

are transparent (so we can get a feeling of what we are paying for).

Albert Gerosolimo
Bulleen, Vic

OS or BS?

I noticed your new section, "Linux Window" (APC May, page 24), where Matt Overington discusses the wonders of Linux (and people who wage idealistic wars against any OS that isn't Windows). It seems to be cool to put Microsoft down these days, but for all the flaws Windows may have, at least it allows people to get the job done in a quick and civilised manner (usually). My experiences with Linux usually involve hours wasted in forums trying to get a simple program to run correctly, only to find I need to edit and recompile the kernel to fix the problem! No decent OS should force people to go through this. The vast majority of users have better things to do with their time and Microsoft allows them that time by investing time and money into what is ultimately a quality product).

Until someone in the Linux camp can develop an OS even half as polished as Windows, Matt and the other zealots will have to accept that Linux will never be accepted by those who choose to pay a small price (to ensure productivity) rather than wasting their time (for free).

Blake Walters
Narangba, Qld

SLIPPING THROUGH THE NET

With reference to the "Wireless broadband road test" (APC April, page 68), I was wondering why Telstra's Mobile Broadband was not included? It has a PCMCIA card (Sierra Wireless 580) and a USB modem (Maxon Minimax) that both run on the same network (CDMA1x and EVDO) as BigPond's card (Maxon MaxCard+). Telstra also has the 3G Novatel Wireless Merlin U630 card (same model as 3's Netconnect card). Further, in "Put the net in your pocket" (APC May, page 72), you state that one can only access content on 3's own portal, not the internet. From my knowledge, you

letter of the month

PLATFORM GAMES

I need to get something off my chest with regard to the "new PCI" format. Two years have passed since the line about PCI Express platforms — that they will pave the way for the future. Yet, I have never seen a PCI-E x1 or x2 card. I have searched the ends of the earth, only to find that no-one wants to take hold of this supposedly better platform (which apparently is

faster, offers more bandwidth, consumes less power and is generally more reliable). Where is this magical platform? Manufacturers of TV/HDTV cards and network cards could all use the enhanced features of this you-little-ripper platform, but where? And when? I feel that it's as forgotten as RDRAM and never to be seen again!

The reason I am writing is because PCI just doesn't cut it anymore in regards to SATA/RAID/HDTV, which could all use the extra bandwidth (and increased quality/speed/productivity); and, this could free other resources. Latently, Adaptec

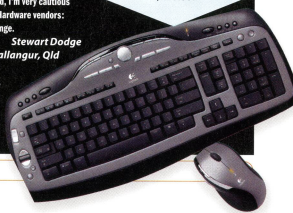
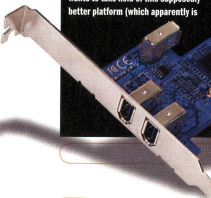
have embraced it for SATA and RAID controllers, which is fantastic, but it's time hardware manufacturers stepped up to the plate and delivered.

It seems to me that everyone doesn't want to change — for reasons unknown? But all aside, I recently found one HDTV card that uses this new platform — but being a no-name brand, I'm very cautious about purchasing it. Hardware vendors: consider this a challenge.

Stewart Dodge
Kallangur, Qld

Well said, Stewart. When is the industry going to really get behind PCI Express?

Stewart wins this month's Letter of the Month prize, a Logitech MX3000 cordless laser mouse and keyboard set, valued at \$179.95.



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Sexy is the word: Apple's emphasis on design sets it apart from "trad" notebook makers.



MY EXPERIENCES WITH LINUX USUALLY INVOLVE HOURS WASTED IN FORUMS TRYING TO GET A SIMPLE PROGRAM TO RUN CORRECTLY!

can change the 3 Services access point from 3services to 3netaccess, power cycle, and that's it: full GPRS/net access. I downloaded Opera Mini on an LG i820 on 3, and it works fine (and with 3's browser).

Kirt Jensen
Kensington, WA

APC News Editor Dan Warne replies: Thanks for the comments, Kirt. You're right — leaving out Telstra Mobile Broadband was an oversight on our part. We were aware of the service but assumed it had been superseded by BigPond Wireless. As it turns out, Telstra continues to offer a tweaked "Mobile Broadband" for corporate fleet customers only. Re: 3 net access, 3's PR insisted net access was only available on higher-end 3 phones. Since your letter, 3 has confirmed you can use 3 internet on any phone by changing the settings.

EASY ON THE iBOOK

Does any company apart from Apple know how to make a good-looking notebook these days? Your juxtaposition of the deconstruction of a beautifully styled MacBook Pro with the comparison test of eight other dual-core notebooks (APC May) highlighted the gulf between Apple's designs and those of

traditional "PC" companies. The MacBook Pro is slim, sleek, curvaceous and integrated. The competitors' products, by comparison, are angular, gawky and incoherent. Come on, notebook makers — give Apple some competition in the design/appearance stakes. Use great design to gain an advantage in the market. And give us users some relief from the uninspiring products you're offering us today.

Richard Neale
Eastwood, NSW

TAKING STOCK OF THE SITUATION

I have now trained my business partner to consult APC whenever he feels the need to start buying more hardware. Last week we were discussing upgrading, so began comparing advertised products in the journal of record for us "would be" tech heads — but what did we find? Our chosen a's web site declared that every tower, manual printer, thermal printer and high-end piece of machinery on the page was out of stock! Either APC shifts its advertisers' units so fast that every manufacturer will start advertising with you — or someone just wasted a great deal of their

advertising budget — giving the customer entirely the wrong impression about their company. One of your other advertisers, on the other hand, had a great deal for only... yeah, well, we bought it. You might want to have a word to your advertisers. As readers, we do look at the ads and buy from them, so if they advertise a product, please suggest to them that it should be in stock — or at the very least that their site doesn't declare that everything is out of stock!

David Kinsella
Quakers Hill, NSW

CUT TO THE PASTE

I'm very surprised that all keyboards miss one very common set of actions that everyone uses: simply cut, "Cut and Paste". Why don't we have a selection of Cut, Copy and Paste keys? We use this function on a daily basis but always have to hit Ctrl+C (or Ctrl+X) and Ctrl+V. There are some fantastic keyboards out there with special keys that do all sorts of things, but I haven't seen one with a simple set of dedicated Cut, Copy and Paste keys. Come on manufacturers, this functionality isn't going away anytime soon!

Justin Edmunds
Centennial Park, NSW

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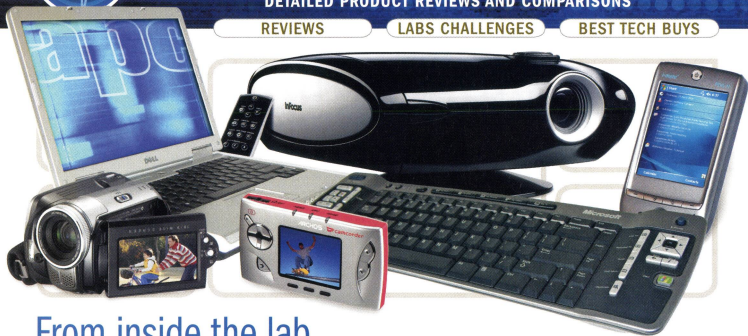
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What's in a name?

Technology marketing 101.

Come up with a funky codename that sounds so cool everyone just has to keep using it. Once ready for launch, dump the codename (which people have come to know and love) and replace it with some utterly nonsensical yet trademarkable moniker.

We see it all the time. Sledgehammer became Opteron, 3GIO morphed to PCI Express, Tiger to Mac OS X 10.4. The list is huge and often revolves around the fact that you can trademark a seemingly random string of letters — but not an actual word. The word is often the process of months of careful market research and consultation, often by the same companies who help decide whether white, black or silver is the colour *du jour* for PC hardware.

Some terms, like Pentium and Athlon, eventually become household names. Others simply fail to inspire. But rest assured that the art of naming is big business.

The latest buzz among these power words is the wielding of “ii”.

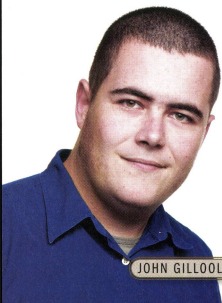
Forming a key part of Intel’s Viiv platform strategy, “ii” has also reared its head in Nintendo’s new console name, the Wii.

Now, you may think that I have an innate hatred of single-syllable words that rhyme with “Pie”. Even if I did, that would be irrelevant — for Wii rhymes with “Wee”. Yes, in their pursuit to create a ubiquitous name — set to unite the disparate people of the world — Nintendo have chosen a slang term for urinating.

Which is a shame, because the Nintendo Tinkle is already the black sheep of the next-gen console game. While the Xbox 360 and PlayStation 3 focus on high-definition console gaming in a traditional sense, Nintendo have gone for a relatively

low-powered console that uses an unconventional control system. The Wii eschews gamepads and instead uses a wireless, motion-sensing controller that looks like a TV remote. This is set to change the way we interface with our games, much like EyeToy created a new type of gaming for the PlayStation 2.

Because of this, the former codename “Revolution” made sense. The Wii name, on the other hand, is just indicative of the gibberish being driven by trademarking. Every time such a name is announced, our hearts sink a little, as we realise that, no matter what we do, we are stuck using it forever after. Let’s just hope Nintendo avoids some kind of “Wii together” advertising campaign. [EITC](#)



JOHN GILLOOLY — TECHNICAL EDITOR



NOW, YOU MAY THINK THAT I HAVE AN INNATE HATRED OF SINGLE-SYLLABLE WORDS THAT RHYME WITH “PIE”

Anthology Solutions Yellow Machine P400T

Solid all-in-one network storage offers everything a small business demands.

The onus for network admins in small business is to consolidate network hardware — to maximise bang for buck. Between broadband modems, routers, firewalls and network storage appliances, admins can often wind up with several pieces of hardware to spec and maintain. Enter the Yellow Machine, a network storage box designed to sit behind an incoming net connection and act as router, firewall, proxy server and backup device. It includes a DHCP server and offers standard routing functions. Stateful Packet Inspection (SPI) and Network Address Translation (NAT) are supported from the box.

The Yellow Machine resembles a metallic shoebox. The front panel includes a mode button and 10 status LEDs covering network and hard disk activity. The rear offers a power switch, a serial port for UPS connection, an Ethernet WAN connector and an integrated 8-port Ethernet switch.

The Yellow Machine is available in a number of configurations, starting at 1TB of storage and scaling up to 2TB. All models offer the same features, but are fitted with different disks. The 1TB device includes four 250GB hard drives that can be set up in a number of RAID configs. This flexibility is a massive benefit for small businesses looking to set up off-line storage or backup systems; it allows the network administrator to set up the hardware as required.

EASY INTEGRATION

Integration into most network environments is a breeze, thanks to the underlying embedded Linux OS. The SMB file sharing protocol is supported as standard, as is the Common Internet File System (CIFS). The device is compatible with

a wide range of network clients including Windows 2000, 2003 and XP, Mac OS X Tiger (or later) and Unix or Linux. The box relies upon a web-based administration that proved compatible with all tested browsers (IE, Firefox, Safari and Mozilla), and the interface offers a wizard that guides you through the setup process. After rebooting to commit changes, the administrator is free to log in again and start managing files. The interface

➔ **CONTACT** Anthology Solutions
 ➔ **PHONE** (02) 9894 8733
 ➔ **ONLINE** www.yellowmachine.com
 ➔ **MARKET** SMB
 ➔ **PRICE** \$2,295 (1TB)

appears sluggish at times (especially when viewing a folder containing thousands of files), but it's bearable. Management can be a little fiddly, but it's no problem for anyone used to configuring network storage products; may be tough for home users though.

The administrator is able to set permissions on a per-user basis and though the device is predominately pitched at the small-business market, enterprise-ready support for ADS, ACL

and LDAP means the box integrates with a large, corporate environment.

An elegant feature is its ability to allow network connections from the internet back to the device. VPN tunnelling is supported. The Yellow Machine offers FTP access from afar, provided your ISP offers a static IP.

SAFETY FIRST

The Yellow Machine ships with a copy of EMC Dantz Retrospect Professional Backup Software, designed to allow up to five client machines to schedule regular backups onto the device. This works well and minimises backup time. It also allows full disk image backups that could help a lot in the case of a disaster. We recorded

transfer speeds between 4.24 and 4.96MB/s during testing. One minor complaint is the lack of gigabit Ethernet support. Although 10/100 base Ethernet is still prevalent in offices, gigabit networking is standard on current motherboards and will become mainstream sooner rather than later.

The Yellow Machine includes Data Medic disk-scrubbing technology, which monitors the disk for early signs of errors that could trash data. If the device is running a RAID array, stored data is moved automatically to prevent loss.

Though consumer level network storage devices are cashing in on the popularity of digital media and home networks, solid, reliable small-business offerings are few and far between. The Yellow Machine elegantly doubles as an 8-port network router and storage device, offering enough features for experienced home users or small-business administrators alike.

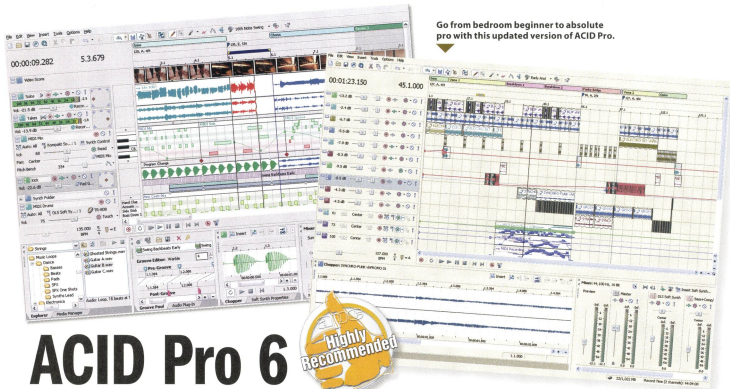
Matthew Overington



✓ Simple, effective, secure network storage.

➔ **VERDICT** ★★★★★

✗ 10/100 Ethernet interface.



Go from bedroom beginner to absolute pro with this updated version of ACID Pro.

ACID Pro 6

Highly Recommended

Version 6 sees this forebear of the modern music production scene back on form.

We all fancy ourselves as potential music stars, right? ACID changed the game when it first launched in 1998. So says the marketing pitch (only this time it's true). At the time, it opened up a new world of desktop music production, with loop and sequencing tools that revolutionised the space — with features such as fitting files to the tempo and pitch of a project.

Over the years this functionality has been imitated very well, though ACID seemed to forget to catch up on other important features. Finally, ACID Pro 6 has brought its A-game back to the court, and with new multitrack recording and excellent MIDI support we're once again talking about superstar software.

The quickest manual combines well with an excellent sample project (that loads by default on initial startup). Very nicely detailed, the project includes 18 tracks with both loops and MIDI recordings, pan,

CONTACT New Magic Australia
PHONE (02) 9528 4555
ONLINE www.newmagic.com.au
MARKET Prosumer
PRICE \$549

✓ Dense feature list; excellent timeline editing; KOMPAKT included.

✓ VERDICT ★★★★★

✗ GUI really needs an overhaul.

volume and pitch-bend tweaks — so an examination of this project will give you a good foundation for how to edit, mix and sequence your own efforts. A fairly comprehensive keyboard shortcut list is also included. I've seen much better charts than this, but it is still very welcome with so many shortcuts available.

Multitrack recording has been a shortcoming of ACID recently, but now it's available with brilliant simultaneous recording features such as non-stop-take recordings. The timeline now also supports multiple audio files per track, so tracks can work as an organisational tool as well (which is a big help in complex projects). A video track is also available for those scoring video projects and

the timeline features a few simple (but useful) information bars. This includes a nice region-marking bar and a tempo bar, where you can change tempo, key or time signature at any point during the track.

It's probably a good time to mention that the ACID interface is very utilitarian. Perhaps there is some thinking that the professionalism of the product is conveyed through the no-nonsense, somewhat bland aesthetic — it is all about the music, after all!

The Mixer and Chopper tool panels look rudimentary — and these are two areas where the app is still behind the competition. Both are enhanced with ReWire and VST plug-in support, and Sony's Sound Forge 8

is available in a bundle to take charge of detailed wave-editing work. The functionality of the Mixer is also heavily integrated directly into the timeline, so on its own it may appear weaker than it really is.

Native Instruments' KOMPAKT is included, which brings a powerful sample playback engine along with 120 MIDI instruments. This helps make the most of the new ability to edit MIDI files directly on the timeline.

It's true that, at this level of audio software, users may feel some allegiance to a particular product. If you're already a Pro Tools devotee, you won't need to touch ACID. If you are looking to work in a video production workflow, you'll be better served going for a product that integrates best (Audition for Premiere, but ACID for Vegas).

If pure music production is your thing, grabbing the ACID Pro 6 / Sound Forge 8 bundle strikes a great compromise between price and performance. Take the trial for a spin first, as the GUI is a potential factor that may steer you towards another product. However, the density of features offered here is second to none — so do give it a serious go!

Seamus Byrne



WITH NEW MULTITRACK RECORDING AND EXCELLENT MIDI SUPPORT WE'RE ONCE AGAIN TALKING ABOUT SUPERSTAR SOFTWARE

Dell XPS M1710

Portable gaming or performance-junkie overdose?

It's a humbling day for us when we, the guys who tread the bleeding edge of tech, have our own home machines put to shame by a review unit.

Straight off the bat, we have to say that, as impressive as it is both on paper and in the silicon, the XPS M1710 is about as niche as they come. It's designed to cater to portable gamers who are after maximum performance (and the associated bragging rights). It packs Intel's highest spec Core Duo T2600 processor, your choice of 1, 2 or a maximum of 4GB of 667MHz DDR2 plus a 100GB hard disk.

Graphics are the heart and soul of any serious gamer's rig

and the M1710 doesn't disappoint on this front either. The 17in wide-screen UXGA 1,920 x 1,200 resolution panel cries out for a thrash at the latest gaming titles (and the 512MB GeForce Go 7900 GTX inside helps achieve this).

We ran it through the usual benchmarks then took it out and about with us — and we're happy to report that this is exactly what serious gamers have been looking for. Sure, it's not small and it's not light, but this is a go-anywhere powerhouse. Portability is our biggest concern and at 4kg you'll want a backpack to chuck



it in. At a shade over two hours of battery run-time, it's reasonable, but you'll want to make sure you travel with your power supply (lest you find yourself mid-boss-fight and running out of juice).

In true geek-chic style, it also has high intensity LEDs placed behind the front speakers, rear side ventilation and on the lid.

A bundled app lets you control each set of diodes independently in case you *really* like fluoro pink. If you can justify the substantial investment, high quality gaming can be yours: any time, any place.

Dan Chiappini

CONTACT	Dell
PHONE	1800 812 393
ONLINE	www.dell.com.au
MARKET	Performance enthusiast
PRICE	From \$4,299

✓ Excellent performance.

★ ★ ★ ★ ★

✗ Huge, limited battery life and expensive.

Philips Digital Photo Display

Say "cheese" — and put your digital photos on display.

Now that digital photography is mainstream enough for some users to be onto their second or third camera, it's a perfect time to hit the market with a new range of

accessories to display those precious moments.

Philips comes to the party by offering a whole other option — part storage, part display — in their Digital Photo Display (or DPD).

Comprising an LCD screen and housed in an iPod-white and clear plastic bordered finish, it won't have any trouble fitting with your office desk or mantle piece decor.

The frame supports CF, SD, MMC and MS, as well as a USB port for direct to PC

connection. The menus on the screen mirror the rear-mounted buttons for easy navigation.

Images can be stored on removable memory cards or by using the small amount of internal memory on the device (which will hold up to approximately 50 images).

We were impressed by the brightness (adjustable) and sharpness of our test images, although you really do need to be looking at it dead-on to see properly (the viewing angle isn't so generous). Unfortunately, while the frame is stylish, it's also prone to scratches and fingerprints.

The internal battery allows you to pass it around to people for a closer look at photos.

You can have your photos scroll sequentially or out of order — with random transitions at intervals of your choosing. Set it to change daily and have a new photo every morning. You can even set a timer, shutting it off at night when you're not looking at it (but turning it back on automatically in the morning).

Granted, it's not cheap, but it is a great way to see the thousands of digital images you'll snap a year without digging through archives.

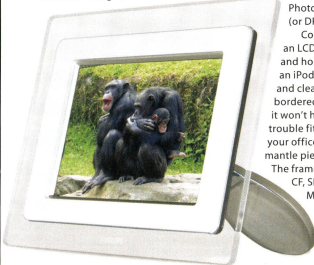
Dan Chiappini

CONTACT	Philips
PHONE	1300 363 391
ONLINE	www.philips.com.au
MARKET	Everyone
PRICE	\$439

✓ Bright and sharp; stylish frame.

★ ★ ★ ★ ★

✗ Expensive; limited viewing angle.





Socket Mobile Power Pack

No more getting caught short with a dead battery — thanks to Socket.

It happens to everyone — the mobile phone cuts out at a vital moment, or your PDA dies while entering crucial data. Let's face it: batteries never last long enough and you're not always near a power point.

The idea behind the MPP is simple. Make the biggest battery that you can (which is still small enough to carry). There's a female USB port and an input for the charger at one end, with a power switch at the other. The 7100mAh unit weighs 312g and measures 102 x 76 x 25mm. The faux-leather case adds a little to this, but provides a belt clip so that you can carry the device around.

After charging the MPP overnight, we connected it to an iPAQ to test it.

We plugged in an after-market charge and sync cable, turned it on and the iPAQ started charging.

The next device we tried out was a Motorola RAZR V3. This was our only failure in testing. The MPP puts out five volts of power for charging — and there's a small booster that can pump that up to six — but neither setup worked. This highlights that you'll need to confirm that your device can be charged on either five or six volts.

The MPP comes with a retractable iPod charging cable that doubles-up as a sync cable — it's like getting two accessories for the price of one. We tested it with a 5th-generation iPod and an iPod nano; both charged up without any hassle.

Even current Palm devices with proprietary power connectors are covered (and international travellers will be happy to note that the MPP's charger comes with a full set of international adapters that cover USA, Europe, UK and Australia).

The number of charges from the MPP (between charges) will vary depending on what your device needs. However, 7100mAh should be enough to charge a phone, PDA and iPod a couple of times each.

If you're a mobile worker — and sick of carrying a separate bag just for chargers — then you need the MPP. While the pipedream of all users (a single charger for all devices) isn't going to be realised any time soon, the MPP is a big leap along that road. Just make sure your devices are compatible.

Anthony Caruana



"Sorry I missed your call... my battery was flat." The MPP means that excuse is now not an option!

CONTACT	Brightpoint
PHONE	1300 300 213
ONLINE	www.socket.com.au
MARKET	Everyone
PRICE	\$229.95

✓ Broad device support.

★ VERDICT ★★★★★

✗ Some compatibility issues.

ASUS N4L-VM DH

Shhhh... can you hear a media centre motherboard? Neither can we.

While not the first Viiv-certified motherboard to grace the APC testbench, ASUS' N4L-VM DH is the first we've seen that uses the mobile Core Duo CPU (rather than a desktop model). Designed for use in media PCs, this i945GM-based Micro ATX board may at first look light on features, but it delivers everything you'd need to build a near-silent media centre box.

That is, as long as you can get your hands on a processor. This was the main challenge we faced, with boxed Core Duos still thin on the ground. We eventually had to source a boxed T2600 directly from Intel — and even they had problems getting one.

Setting up the board was a breeze. Because the CPU is designed for notebooks, it doesn't ship with a heat sink. Instead, ASUS has provided one with the motherboard

CONTACT	ASUS
PHONE	N/A
ONLINE	www.asus.com.au
MARKET	Prosumer
PRICE	\$279

— designed to clip into two small loops mounted near the CPU socket. While the mounting seems flimsy compared to desktop PC designs, the heat sink weighs almost nothing, negating potential stress problems on the clips.

Once the CPU is mounted, the rest of the installation goes as normal. On the driver CD, ASUS includes all the necessary drivers as well as Intel's quick-boot

✓ Near silent with good performance.

★ VERDICT ★★★★★

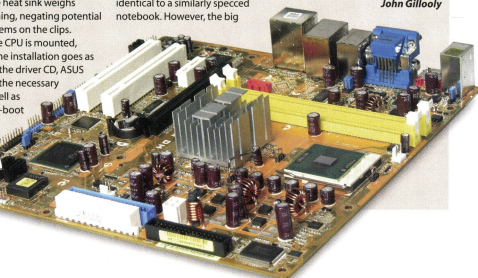
✗ Micro ATX; needs Windows MCE to get the most out of it.

and Viiv software packages (which are designed for Windows Media Center Edition).

The result is performance identical to a similarly specced notebook. However, the big

advantage is that the CPU fan emits almost no noise. For a media centre PC this is an excellent solution; it requires no extra soundproofing (while still delivering the performance needed for HD movie playback). While it's not a solution for all, the ASUS N4L-VM DH is near-perfect for a media box.

John Gillooly



ASUS recommends Windows® XP Professional



ASUS Webcam Notebook Series

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Enjoy true wireless freedom with ASUS Webcam Notebook Series. Built-in webcam and microphone allow you to stay connected with family and friends without the hassle of external connections and tangling wires! ASUS W5F, A6Ja, A7Jc and V6J are powered by Intel® Centrino® Duo Mobile Technology giving you outstanding performance.



W5F

- Intel® Centrino® Duo Mobile Technology
- Intel® Core™ Duo Processor T2400 (1.8GHz, 667 MHz, 2MB L2 Cache)
- Mobile Intel® 945PM Express Chipset
- Intel® PRO/Wireless 3945ABG Network Connection
- Microsoft® Windows® XP Professional
- 512MB DDR2 533/667MHz, up to 1536MB
- 12.1" WXGA Colour Shine & Crystal Shine LCD
- 8GB HD
- DVD-Super Multi Drive Dual Layer
- 1.3M pixel web-camera
- 802.11b/g, Bluetooth V2.0+EDR



A6Ja

- Intel® Centrino® Duo Mobile Technology
- Intel® Core™ Duo Processor T2400 (1.8GHz, 667 MHz, 2MB L2 Cache)
- Mobile Intel® 945PM Express Chipset
- Intel® PRO/Wireless 3945ABG Network Connection
- Microsoft® Windows® XP Professional
- 2x 512MB DDR2 533/667MHz, up to 2GB
- 15.4" WXGA Colour Shine LCD
- ATI Mobility™ Radeon™ X1600 512MB Hypememory
- 8GB HD
- DVD-Dual with Dual Layer and LightScribe
- Built-in 1.3 Megapixel Camera
- 802.11b/g, Bluetooth V2.0+EDR



A7Jc

- Intel® Centrino® Duo Mobile Technology
- Intel® Core™ Duo Processor T2400 (1.8GHz, 667 MHz, 2MB L2 Cache)
- Mobile Intel® 945PM Express Chipset
- Intel® PRO/Wireless 3945ABG Network Connection
- Microsoft® Windows® XP Media Centre Edition
- 2x 512MB DDR2 533/667MHz, up to 2GB
- 15.4" WXGA Colour Shine LCD
- ASUS Splendid™ - Video Intelligence Technology
- ATI Mobility™ Radeon™ X1600 256MB GDDR3
- 10GB SATA HD
- DVD-Dual with Dual Layer and LightScribe
- Built-in 1.3 Megapixel camera
- Hybrid TV
- 802.11b/g, Bluetooth V2.0+EDR



V6J

- Intel® Centrino® Duo Mobile Technology
- Intel® Core™ Duo Processor T2400 (1.8GHz, 667 MHz, 2MB L2 Cache)
- Mobile Intel® 945PM Express Chipset
- Intel® PRO/Wireless 3945ABG Network Connection
- Microsoft® Windows® XP Professional
- 2x 512MB DDR2 533/667MHz, up to 2GB
- 15" WXGA + ZBD LCD
- 12GB HD
- DVD-Dual with Dual Layer and LightScribe
- NVIDIA GeForce Go 7400
- 512MB TurboCache
- 10/100/1000 Ethernet
- 802.11b/g, Bluetooth V2.0+EDR



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TurboDemo 7 Professional

Create interactive software demos for marketing and training purposes.

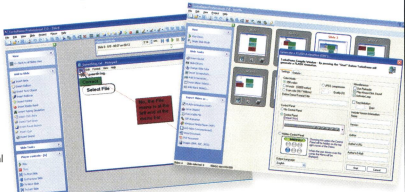
TurboDemo is positioned as an alternative to Macromedia Captivate (now Adobe) for capturing a series of on-screen actions including mouse actions and keystrokes. The resulting sequence can then be edited to clean up any missteps, balloons can be added to give instructions or to draw attention to particular areas, and interactivity introduced by specifying what should happen if the user clicks in a particular place, for instance. Sounds can be added during editing, and you can record a commentary during the capture session.

There's not much to choose between TurboDemo and Captivate in terms of ease of use, but Captivate

has more flexible quizzes and its balloons and other visual elements have a cleaner, more elegant look. On the other hand, TurboDemo provides more publishing options — including Java and Windows Media.

Despite the "full size" packaging, TurboDemo ships on a single CD without printed documentation. The PDF manual relates to version 6, not 7 — but the help is up to date. We would have liked to see at least a printed cheat sheet with the keyboard commands used during capture.

TurboDemo is also offered in Standard (US\$399) and Enterprise



(US\$999) versions. Standard lacks some of Professional's e-learning features and many of the output options including AVI, PDF and WMP.

TurboDemo's main advantage over Captivate comes in the Enterprise version, as it includes capture tools for Unix, Linux and Mac OS X — the finished Flash demos are inherently cross-platform.

It also includes a PowerPoint to Flash converter that, while not directly related to the main application, generates smaller files from a presentation for downloading or emailing.

Multi-user and "with maintenance" licences are available for each version and a trial copy may be downloaded.

Stephen Withers

CONTACT Bernard D&G
PHONE +49 712 116 880
ONLINE www.turbotdemo.com
MARKET SMB
PRICE US\$629

✓ Flexible publishing; cross-platform capture option.
★ ★ ★ ★ ★
✗ Graphical elements lack elegance.

MoneyWorks Gold

Robust, full-featured accounting — but does it work the way you do?

MoneyWorks Gold is an accounting package which is aimed at the higher end of the SMB market and is distinguished from its stable mates by the inclusion of departmental accounting, inventory, job tracking, time billing, quoting and custom reporting. However, there's no real support for payroll — PAYG and other deductions must be calculated externally.

Multi-user support allows for several users of one computer and simultaneous use of one set of accounts over a LAN (subject to licensing). Access rights can vary.

It's a full-featured and robust program, but there are things we dislike. MoneyWorks' sub-windows are unnecessarily modal: you must finish or abort a transaction before you can bring another window to the front. There are no up/down buttons or a calendar to

CONTACT Cognito
PHONE 1800 140 859
ONLINE www.cognito.co.nz
MARKET SMB
PRICE \$895

✓ Solid, full-featured bookkeeping.
★ ★ ★ ★ ★
✗ Quirky user interface.

simplify date entry. The program does not automatically recall the details of repeated transactions (eg. your driver always spends exactly \$50 at the same servo). Unless you memorise the account codes, you'll be mousing across the screen as the list appears in a separate window rather than a pop-up menu, though a partial answer to this is to resign yourself to using the keyboard rather than the mouse.

Other niggles include a GST report that doesn't match the

layout of the BAS, expecting the user to save periodically as if they were using a spreadsheet and no built-in support for PDF output (eg. for emailing invoices).

On the credit side of the ledger, certain fields — such as customer name — auto-complete when you type the first few letters and you can also set up rules to automatically control the allocation of transactions to one or two accounts according to the To/From or Description field.

Our criticisms are admittedly subjective. So, take advantage of the downloadable demo version to see if you're comfortable with it.

Stephen Withers



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The Broadband Phone Company



[^]Savings based on engin customer survey conducted February 2009. 1318 respondents. Individual savings may vary. *engin Voice Box or Softphone, broadband Internet connection and Ethernet modem/router may be required. Broadband access, other phone service provider fees excluded. Quality of service may vary with choice of broadband speed. engin Voice Box RRP \$139, minimum monthly plan \$9.95 plus call costs. Calls may attract separate GP charges. Call charges include GST and are rounded up to the nearest cent before GST. 10 cents applies to local and national calls in Australia. Third rate calls for the first minute, thereafter 1¢ per second. engin Voice Box is not coded to function with engin networks. 3.5 cent countries include UK, Ireland, USA, Canada, China, Hong Kong, Singapore, Taiwan, Germany & New Zealand subject to change without notice. Higher rates may apply for calls to mobile phones. Credit card or charge card billing only. Subject to credit approval. For other charges, monthly billing details and our Standard Form of Agreement go to engin.com.au. P3088P06



InFocus IN72 Projector

InFocus' entry-level may suit if you're keen to project some home entertainment.

When it comes to picture size, sharpness and motion blur, the IN72 puts high-priced LCD TVs to shame. Despite only having a DVD-like resolution of 480p, the IN72 does an excellent job of displaying 576p SD digital TV.

The IN72 is a Digital Light Processing (DLP) wide-screen projector with decent 2,000:1 contrast ratio (but low 900 Lumens brightness). It can produce a 2.34m diagonal picture over a distance of 3.7m. This is far more bang for your buck than LCD or plasma — but not that impressive for a projector; the IN74 (\$3,499) can throw an image 20 per cent larger — but is also brighter to compensate.

When it comes to connections, the IN72 is well-stocked, offering HDCP-compatible HDMI, M1-DA/ DVI, component, composite and S-Video. PAL, NTSC and SECAM compatible, it supports front,

ceiling and rear projecting and has a manual focus and zoom. Digital keystone correction lets you allow for picture distortion by up to 20 per cent. Whisper mode drops both the fan noise and the brightness, but we found normal mode to be perfectly acceptable.

What's really impressive for an entry-level model is the four-speed, six-segment colour wheel

✓ Sharp; quiet.

⚡ VERDICT ★★★★★

✗ Small image; not high-definition.

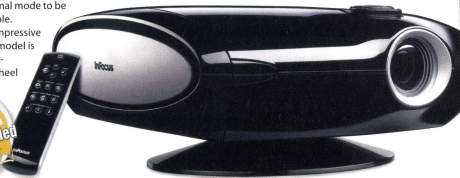
— all but eliminating the "rainbow effect" (no more colour blurring when you move your eyes).

It's also got InFocus' easy-to-use menu system and remote control. Press the switch on the back of the

remote and the buttons light up. Hold the switch and a tiny light shines from the front like a torch.

If you want the biggest picture around or to enjoy high-def TV, the IN72 is not the projector for you. If you're looking for a high quality home entertainment projector that's quiet, easy to use and not cripplingly expensive, the IN72 is pretty hard to beat.

Adam Turner



i-Theater personal display

If you want to look as cool as *Star Trek's* Geordi La Forge, this could be for you.

The i-Theater headset connects to any composite video source, sending the signal to two tiny colour LCD screens which you see as one picture. The headset has stereo analogue inputs, with earbuds off the arms.

Weighing only 78g, the i-Theater is surprisingly comfortable. The sound is quite good and the picture is reasonably sharp, considering the 320 x 240 resolution. PAL, NTSC and SECAM-compatible, it runs on two AA batteries and has a volume

control on the battery pack. The packaging claims to simulate a 50in display at a distance of 2m, but it's voodoo mathematics — it will also simulate a screen 400 miles wide, if you're in Sydney and the screen is in Melbourne.

The main weakness is the amount of the outside world you can still see — equivalent to around a small pair of reading glasses. This makes it difficult to become fully immersed in what you're watching — it needs blinkers, or a

⚡ CONTACT Worldtech
⚡ PHONE (03) 9310 3497
⚡ ONLINE www.worldtech.com.au
⚡ MARKET Everyone
⚡ PRICE \$649

✓ Light; good sound and picture.

⚡ VERDICT ★★★★★

✗ Not wrap-around; expensive.

redesigned to be more like wrap-around sunglasses. Sitting in the dark improves the experience; it almost feels like the cinema.

Its other main drawback is the shape of the LCDs. If they were wide-screen rather than 4:3, they would be much better for watching movies (and if they were a little wider they would take up

more of your peripheral vision, making the experience much more immersive).

The headset isn't adjustable beyond a choice of two nose cushions, so those with smaller heads and noses will struggle to keep them in place — difficult, considering the narrow viewing angles of the LCD panels.

Overall, the i-Theater is certainly watchable, but if you're expecting an immersive, IMAX-style experience you'll be disappointed. It's fun to use but really just a novelty — and one that could wear off very quickly (which is a concern at this price).

Adam Turner



Plantronics Pulsar 590A

Have Bluetooth headsets finally come of age?

Plantronics Pulsar 590A sets out to be all things to all people. As well as being a mobile phone headset, you can pair it with up to five devices simultaneously including mobile phones, PDAs, computers and an MP3 player through their 3.5mm Bluetooth universal adaptors.

We paired the Pulsar 590A with a Motorola RAZR V3, an Apple PowerBook, an iPod and an iPAQ hx4700. All connected easily without any problems. It doesn't require a passkey and it can't be paired with any other devices (ensuring security).

When the 590A is paired to your mobile and an audio device, it automatically mutes the latter so you can receive the incoming call. Answering is just a matter of tapping a button on the right side; most of the other controls were a little tricky to access. Over

time you'd get used to the positions of all the other controls, although they're too close together for our liking.

Headphone audio quality was actually very good. We tried a number of different musical genres and though the bass is a little strong, there's no major complaints. Using it as a phone headset was fine. A short plastic tube that protrudes from the right headphone picks up your voice. Callers reported that I could be clearly heard.

Both the headphones and the universal adaptor can be charged from a power supply — or over USB from a docking station. When not in use, the 590A and adaptor fold into a small supplied case.

At about 95g, the headphones are comfortable — but began to feel a little heavy after a while.

They can be adjusted to accommodate a wide variety of head sizes however.

Although it's not cheap, the Plantronics Pulsar 590A headset does offer a lot of value. With the capability to be used with practically any device, it's a piece of mobile kit that no road warrior should be without.

Anthony Caruana

CONTACT	Plantronics
PHONE	(03) 8371 0050
ONLINE	www.plantronics.com.au
MARKET	Everyone
PRICE	\$299 (\$229 without UA)

✓ Sound quality.

•• VERDICT ★★★★★

✗ Comfort.



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www.powerware.com.au 1300 UPS UPS



Maxon EtherMax

This flexible router makes everything EV-to-DO.

The Maxon EtherMax is a portable router that uses the EV-DO mobile wireless standard for connecting to BigPond wireless broadband. It's small enough (10 x 11 x 2.5cm) and light (approx. 150g).

The snag is that it has an external brick power supply that takes up at least the same volume again (with cables and mains plug, adding another 275g). The power connector is an unusual design, so you couldn't easily substitute another PSU of similar rating. A detachable and fairly hefty chromed metal stand with rubber feet provides good stability for desktop use — and the combined power cable length of over 3m is convenient.

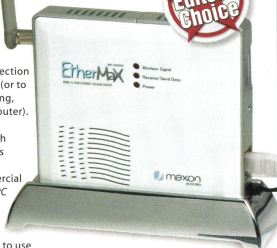
You wouldn't choose the EtherMax over a PC Card device if you only wanted on-the-road

connectivity, but its Ethernet interface provides connection sharing and compatibility with most recent desktops and notebooks, regardless of operating system. We tried it with computers running Windows XP and Mac OS X, and it worked easily. When plugged into a network switch, the EtherMax shared the connection between multiple computers with no difficulty.

There's no diddling around — just plug in when you're ready to connect and unplug when you're finished. The only wrinkle — stressed on a bright yellow card inside the packaging — is that you should unplug the Ethernet cable and wait a few seconds before shutting off the power. If you prefer, you can use the EtherMax's web interface to

enter bridge mode to control the connection from the computer (or to use it with an existing, perhaps wireless, router).

We're not concerned here with the appropriateness of 1x EV-DO from a technical or commercial perspective (see APC Labs' Wireless broadband road test, April, page 68), but if you want to use BigPond wireless broadband with an external modem — and your pockets are deep enough — the



EtherMax is more flexible than Telstra's standard USB offering.

Stephen Withers

★ CONTACT Maxon

★ PHONE (02) 9707 2000

★ ONLINE www.maxon.com.au

★ MARKET Everyone

★ PRICE \$654.50

✓ Stylish and simple.

★ VERDICT ★★★★★

✗ Pricey; bulky power supply.

JVC Everio GZ-MG77

Great initial ease-of-use — but you can forget about editing.

Video which is free of tapes or memory cards is a great idea. But the devil can be in the details, and with the JVC Everio GZ-MG77, you'd better understand what you're in for before you ink the deal.

The up-front experience is second to none. Pick up, switch on and just shoot for at

least seven hours in ultra-fine recording mode. Recording for longer will reduce video quality. It's simple to use, with a comfortable zoom controller and a good-sized LCD that gives you a true view of the camera's 16:9 shooting frame.

In this MG77 model there's a 30GB hard

drive for storage (on which, every time you hit the record button, a new file is created). You can review any clip through fast and easy playback mode. If you've been out shooting for a while, you can even browse by date to find what you want even faster.

But it's here that things start to go wrong. The camera attaches to your system via USB and is recognised as an external drive. From here, you must copy two folders of data onto your system and then use the provided software (a CyberLink solution) to turn this video data into your final film (and output to

DVD). The software isn't terrible, but it's a far cry from a genuine editing package — and the video format is incompatible with more serious edit suites. Skilled users will, however, find a way to convert to something usable.

What a shame that the Everio line, now in its fourth generation, has yet to make its footage easier to work with. If I were to see a model with files stored in a standard MPEG or DV format (or with a DV stream output mode), I would recommend it highly. Sadly, the poor compatibility with computer editing makes for a real disappointment.

Seamus Byrne



★ CONTACT JVC Australia

★ PHONE 1300 728 225

★ ONLINE www.jvc-australia.com

★ MARKET Everyone

★ PRICE \$1,499

✓ Easy to use; good file system; tape-free.

★ VERDICT ★★★★★

✗ Incompatible with most major edit packages (without a big effort).

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i-mate PDA-N

In the market for a light and tight PDA package?

Based on HTC's Galaxy platform and running Windows Mobile 5, the PDA-N packs a lot into a tight package. At 110 x 60 x 18mm (and weighing in at only 126g), the PDA-N is definitely pocket-sized.

As you'd expect, it has Bluetooth 1.2 and 802.11b Wi-Fi, but there's no mobile phone capability. The trend towards including GPS into handhelds is continued, but the lack of any bundled mapping software is disappointing.

Memory is tight. While the 128MB RAM is adequate, the 64MB of ROM is at the bottom end of what's needed. With Windows Mobile 5, the ROM is used to store the OS. The RAM is used while applications are running. While there's a SDIO/MMC memory slot, this can only be used to expand storage

capacity. As such, there is no way to extend the RAM.

Benchmark results reflect the lack of RAM and the 300MHz CPU. We found that results were at the lower end of expectations with an overall score of 385. This is way below the best we've recorded of around 2,700. While actual operation isn't seven times slower than the leader, it is noticeable.

As you'd expect from such a small screen, it does take a little getting used to the interface. With everything being so small, stylus taps need to be reasonably precise. There isn't much margin for error and fingertip use wasn't easy.

CONTACT i-mate
 PHONE 1300 850 513
 ONLINE www.clubimate.com
 MARKET Prosumer
 PRICE \$549

As is the norm, there are four function buttons for starting apps quickly, a multi-directional controller and a couple of multi-function LEDs. Notably missing were buttons for the Windows Mobile 5 soft-keys. These are on-screen buttons that change function depending on the screen you're in. Many Windows Mobile 5 devices provide hardware buttons to activate these (so that you don't have to put finger to screen).

Anthony Caruana

✓ GPS; small and light.

★ VERDICT ★★★★★

✗ No GPS software; low RAM; slow.



Archos Gmini 402 Camcorder

Archos takes the next step in the all-in-one arms race.

The Gmini 402 Camcorder can capture MPEG-4 video and JPEG photos — as well as play MPEG-4 or WMV video on the built-in 2.2 inch colour LCD. It can also play MP3, WAV, WMA and WMA-protected audio files

plus record in WAV (via the built-in mic — but there's no built-in speaker).

With no DRM, the you can drag and drop files to the 20GB hard drive via USB 2.0. It will copy files from other devices such as digital cameras, but the small, low quality screen (220 x 176 pixels and 262,000

colours) doesn't make for a great viewer. Unlike most Archos PMPs, it can't record video from external sources such as DVD players.

The still camera offers an impressive number of features, like adjusting the exposure and white balance. The 2x digital zoom is about what you'd expect, but the camera has a fixed focal point and no flash — making it fine for group shots and landscapes (but not close-ups or indoor use). The LCD is almost impossible to see in direct sunlight — a problem as it's the only viewfinder.

Disappointingly, the photos are in extremely soft focus, we've seen decent camera phones take better

pictures. Video looks much better, shooting 448 x 336 MPEG-4 at 25fps. An internal rechargeable Lithium-Ion battery offers up to 10 hours for music, four hours for video playback and two hours for recording.

Like all Archos products, the Gmini 402 Camcorder is expensive. Usually you pay a premium for the best gear on the market, but the poor photo quality means that's not the case here. If you're after a decent still camera, this is not for you. Alternatively, if you're more interested in playback quality, look for a player with a bigger, sharper screen.

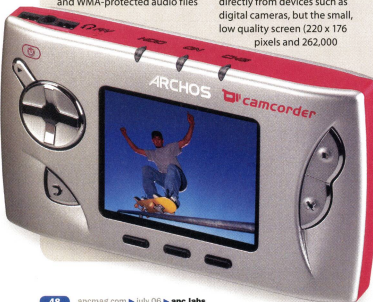
Adam Turner

CONTACT Worldtech
 PHONE (03) 9310 3497
 ONLINE www.worldtech.com.au
 MARKET Everyone
 PRICE \$739

✓ Video and still camera; media player.

★ VERDICT ★★★★★

✗ Small LCD; poor photos.



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GNU Parted 1.7.0rc5

Fancy a little non-destructive partition resizing? Read on.

Parted is one of those tools that should be in the armory of every network administrator and PC technician on this green earth. It's powerful — and it can be destructive — but, with the right knowledge, it can also be immensely useful. If you think that in most cases fdisk can do the trick, you could be right. There are some circumstances, however, where Parted is a better solution (if not the only solution).

Parted is a GNU utility that can create, resize, delete, check and copy partitions. And not only partitions — but file systems too. It works, to a varying degree, with ext2, ext3, FAT16/32, linux-swaps, HFS/HFS+

and ReiserFS. It can also detect, but not create or resize, JFS, NTFS, UFS and XFS. Of course, it is possible to handle some of these file systems with external tools. For NTFS, for example, one could use mkntfs and ntfsresize.

Parted supports Intel EFI/GPT, MS-DOS, Amiga, PC98, Sun disk and BSD disk partition tables.

What can this utility do that would put it above fdisk? How about non-destructive partition resizing? You can also copy file systems from one partition to another, fix broken partition tables, create file systems (FAT, ext2 or linux-swaps), move and rename partitions and check for file system errors.

Some people have compared Parted to Partition Magic.

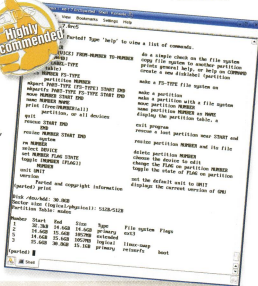
While we're not going to do a feature-by-feature analysis of the two programs, we must agree that in some respects they are similar.

Parted is different in one respect though, as it's console-based. However, if you don't like using the old console, (and if not, why not?) there are graphical front-ends available. Google for "GParted" or "QtParted".

If you work in one of the aforementioned professions — or if you're just a Linux

hacker — you stand to gain much from acquiring, learning and using Parted. It will help you. Just be careful though...

Peter Sbarksi



CONTACT Free Software Foundation
PHONE N/A
ONLINE www.gnu.org/software/parted
MARKET Performance Enthusiasts
PRICE Free

✓ Some excellent and powerful features.
VERDICT ★★★★★
✗ Can be a little daunting at first.

KPhotoAlbum 2.2

Getting lost in all your digital images? KDE just might have the answer.

KPhotoAlbum 2.2 (or KimDaBa, as it used to be known) is a KDE photo album with a strong focus on two important tasks: annotation and searching.

The author of this application explains that he created KPhotoAlbum to help him remember the story of each individual image (a good cause in the era of digital photography). He needed a tool to do this as the volume of photographs he owned increased dramatically over the years. There wasn't much else on offer that could do the job in the way he wanted — so he ended up writing KPhotoAlbum.

Most users will find KPhotoAlbum easy to use. A twenty-minute

learning curve is all that is required. A first-time user, initially, must specify the directory which contains the image files. KPhotoAlbum scans the directory (and all underlying subdirectories) and imports everything it finds.

Unfortunately, KPhotoAlbum is not able to add new images itself. If you wish to add a new picture, you must copy it to the directory with other images. Then, you have to rescan the directory for KPhotoAlbum to pick it up. To be honest, that's not our preferred way of doing things.

Anyway, once the images are imported, it is possible to view and, importantly, annotate them.

annotate an image, the user needs to click on it and call up a properties dialog box (it is possible to annotate multiple images at the same time). Here you can add a label, time and description. You can also add miscellaneous keywords, people's names and places. These can assist in image searching. You can save and

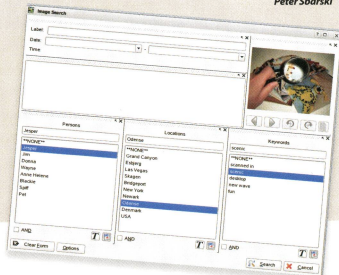
export whole albums to keep them safe — or to share them with others.

If you take your job seriously and annotate each image judiciously, you'll get a lot out of KPhotoAlbum. But if you don't do it, then KPhotoAlbum, due to its otherwise limited amount of features, may not be what you're looking for.

Peter Sbarksi

CONTACT KDE Organisation
PHONE N/A
ONLINE <http://kde.kde.org/kphotoalbum>
MARKET Everyone
PRICE Free

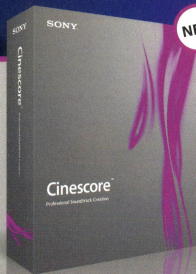
✓ Annotation and search.
VERDICT ★★★★★
✗ File importing; limited amount of features.



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MS Remote Keyboard for XP MCE 1.0

Can this keyboard cover all the angles? Not even remotely.

Operating a PC takes more than a mouse (and definitely more than a remote control). Microsoft's Keyboard for Windows Media Centre Edition tries to do everything. It's a wireless keyboard with Media Centre remote control functionality built in, as well as an accupoint-style device (similar to the mini mouse "joysticks" found in some notebooks) for driving your lounge room PC from a distance.

Microsoft advertises the keyboard as having a 30ft range, and our testing showed this is roughly accurate, depending on the lighting conditions in the room. The keyboard connects to the PC via the Microsoft MCE remote control infra-red receiver (provided with MCE — there isn't any type of receiver included in this box, so third party media centre users beware!).

The keyboard itself is packed with functionality matched to MCE machines. Hot buttons for accessing live or recorded TV, your EPG and MCE itself are present, plus a basic (but complete) set of media controls ie. play, rewind, pause, record, TV channels and audio volume. A button on the top of the keyboard lights up the controls brightly. Typing on the keyboard is great and — due to the wide and weighty nature of the device — it sits on your lap well.

The board is held on both sides, with rubberised grips underneath.

The mouse's controls are split between left and right (for buttons and pointer respectively — and both are controlled with the thumbs).

Here is where the keyboard falls down. The mouse pointer is absolutely abysmal. With delicate care it can be cajoled onto an icon or button, but overall it's next to

useless. After initially being exposed to the board with an MCE machine that we had in testing, we decided to order another keyboard board from Microsoft — as we assumed the first was faulty.

Unfortunately, this proved not to be the case!

Nick Race

CONTACT	Microsoft
PHONE	13 20 58
ONLINE	www.microsoft.com.au
MARKET	Everyone
PRICE	\$199.95



Great idea.



VERDICT ★★★★★



Pointer is horrible; extremely overpriced.



Acer Aspire E650 MCE PC

One great Viiv PC — but it's let down by heat issues.

Viiv is the new buzzword for every PC vendor stocking Intel equipment — and Acer is no exception. The APC Labs have been inundated with Viiv

machines (we're tripping over them in the hallway), so choosing the right systems to test has been half the challenge in covering the trend. Acer has plopped down its chips with the E650 Viiv media centre, but it's rough round the edges.

The system is a Pentium D 2.8GHz on an Acer-branded 945GM-6 motherboard in a mini-ATX tower case. This is the first problem with Acer's vision: though the case is a Red Dot award winner in Germany, that doesn't mean it's suited for the lounge room.

The thermals in this system are so tight that running it with the

side off causes the PC to overheat and shut down every time — and the system crashed more than once during testing with the side on (and in a temperature-controlled environment).

Thanks to Intel's SpeedStep technology in the Pentium D, the performance of the machine suffers with heat stroke. On the positive side, the case does include plenty of room for future expansion.

The Acer's MCE credentials are earned with two Hauppauge WinTV-HVR-1100 DVB-T TV tuners, enabling simultaneous recording and playback (a must

to get the most out of MCE). The system has a single 300GB Seagate hard disk drive for storage, plus an LG GSA-H11N double-layer DVD-RW for DVD playback and recording.

An ATI Radeon X550 was chosen for visual output (and a whopping 2GB of RAM keeps things running smoothly). The system outputs to a TV via S-Video or composite (with included breakout box) and a remote keyboard, mouse and Microsoft-ese remote control finish the bundle.

At this price, the system includes a 19in LCD monitor.

Nick Race

CONTACT	Acer
PHONE	1300 366 567
ONLINE	www.acer.com.au
MARKET	Everyone
PRICE	\$2,499



Good tuners; upgradability.



VERDICT ★★★★★



Heat issues; unsuitable case.



LevelOne IP Network Camera

Fast Pan/Tilt/Zoom Network Video Camera with 2 way Audio

- MPEG4 and MJPEG high resolution images
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- Include professional monitoring software supporting up to 16 cameras
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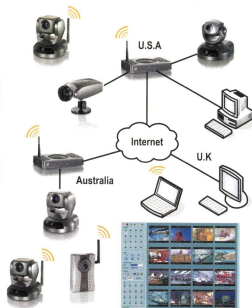


WCS-2040
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LevelOne professional monitoring software



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- Motorized Pan and Tilt via Web remote control
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- Include professional monitoring software supporting up to 16 cameras



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- Supports MPEG4 (Short header mode) compression for bandwidth-efficiency
- Intelligent Motion Detection
- High sensitive microphone to deliver high quality streaming video
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- Pre/Post Alarm Snapshots
- Supports UHP & DDNS
- Include professional monitoring software supporting up to 16 cameras



FCS-1050
\$799.95 RRP incl. GST
 Day/Night IP Network Camera

IP Network Camera

- Optimal synchronization of audio & video
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- Intelligent motion detection
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- Include professional monitoring software supporting up to 16 cameras
- MPEG-4 compression minimizes bandwidth requirement



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 11g Wireless IP Network Camera

FCS-1030
\$249.95 RRP incl. GST
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P/T/Z Network Camera

- Motorized Pan and Tilt via Web remote control
- Supports digital zoom function
- Pan: Range 350 degree
- Tilt: Range 125 degree
- CMOS sensor integrated
- AV-Out to external monitor
- Include professional monitoring software supporting up to 16 cameras



WCS-2060
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Day/Night IP Network Camera

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- Provides Day/Night functions with 10m IR lens
- Vandal-proof and Waterproof
- Supports MPEG4 (Short header mode) compression for bandwidth-efficiency
- Intelligent Motion Detection
- High sensitive microphone to deliver high quality streaming video
- Support resolution 704/576 pixel at transmission rate 30fps
- Pre/Post Alarm Snapshots
- Supports UHP & DDNS
- Include professional monitoring software supporting up to 16 cameras



FCS-3000
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Domed Outdoor Housing

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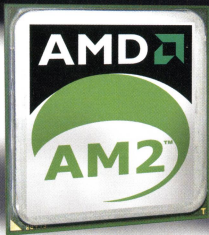
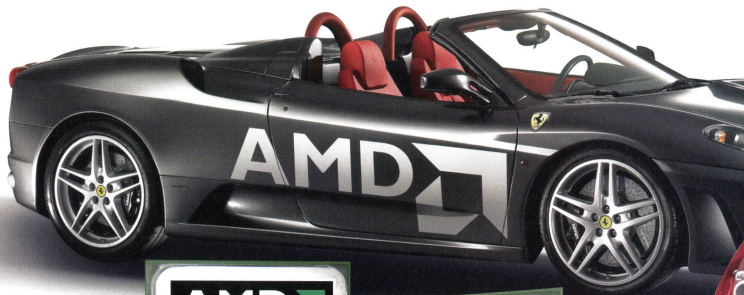
HiTech Distribution
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 Website: www.hitechdist.com.au
 Email: sales@hitechdist.com.au

Pioneer Computers Australia
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VIC Ph: (03) 8790 1830
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 Website: www.compu.com.au
 Email: sales@compu.com.au



Strap in for the Pentium killers

We sample the Intel and AMD CPUs that will power the next-generation of PCs and bring the Pentium era to a close. Early tests reveal scary leaps in performance.





The APC Labs was left buzzing after our first hands-on test of Intel and AMD's big new chip releases — the Core 2 Duo and AM2. Both are set to dominate the computing world. When the inevitable Vista upgrade arrives, the hardware decision will revolve around which of these two CPU designs stands out — and it is fast shaping up to be a battle laden with the unexpected.

These are two very different CPU launches, and APC has been getting intimate with both Intel and AMD's products. We dispatched Nick Race to Singapore to spend some hands-on time with the Core 2 Duo CPU and pick the brains of Intel's engineers to understand the underlying architecture changes. The Core 2 Duo is a completely new desktop processor, combining the best of Intel's desktop and mobile technologies while throwing in some new features as well.

Back in the APC Labs, John Gillooly was getting hands-on with AMD's AM2 CPUs, seeing what the introduction of DDR-2 does for the Athlon 64's performance. Because this is an evolutionary change, we focused on

the difference between socket 939 and socket AM2 Athlons.

We are holding off on the big showdown between the two CPU lines until retail products of both flavours emerge, which will enable us to see just how well the two manufacturer's mainstream offerings shape up.

However, as you will see, the performance pattern is very different to what you would expect, especially from Intel's new beast. It appears that AMD's lead in the performance stakes with its Athlons is about to be usurped.

When Intel launched the Pentium 4 in late 2000, it expected the underlying Netburst Architecture to carry it well into the future. Time has shown this not to be the case, as Intel has struggled these past few years to deliver high performance (without unacceptable heat output).

For a long time the industry has predicted that Intel would wipe the Netburst slate clean and return to an architecture based upon the thermally efficient Pentium M processor.

This replacement, codenamed Conroe and now officially Core 2 Duo, was set to hit late this year. However, Intel has moved the launch forward to steal AMD's thunder when AMD unveils its new range of Athlon 64 CPUs. Unlike Intel's complete architectural revision, AMD's new socket AM2 processors are an evolution of the Athlon 64 architecture launched in 2004.

AMD's new CPUs, and the supporting AM2 motherboards, are already trickling onto the market; however there is still no solid date for Core 2 Duo availability. The new Intel CPUs will definitely be available by the end of this year, but anything more precise will depend upon yields of this new chip.



**TWO VERY DIFFERENT CPU LAUNCHES,
AND APC HAS BEEN GETTING INTIMATE
WITH BOTH INTEL AND AMD'S PRODUCTS**



Intel Core 2 Duo

APC's exclusive benchmarks show the Pentium replacement has serious grunt, as *Nick Race* reports.

Intel's new processor, codenamed Conroe and now officially titled the Core 2 Duo, has been discussed endlessly in magazines, forums and trade fairs since its appearance on roadmaps in 2004. And apart from some light-on-the-info sneak peaks at IDF in San Francisco, nobody had any firm information on what exactly it was, and just how fast it would be.

APC stepped up for the first real opportunity for non-Intel-ites to spend some quality time with the chip and to be briefed on what, exactly, Core 2 is all about. Intel decided to start again with the Core 2, with their Israel-based design

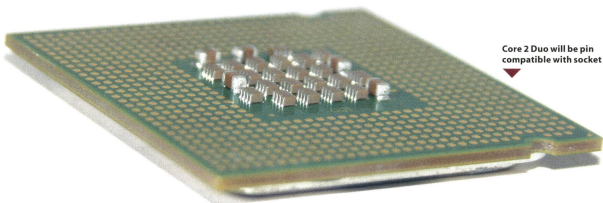
team responsible for the successful Pentium M taking the lead.

Though the Core 2 has elsewhere been incorrectly labelled as the successor of the Pentium III, Francois Piednow, senior performance analyst decried the assumption, saying that the two processors are related in the same way that cars all have four wheels and an engine; though some aspects of the microarchitecture are similar, it doesn't mean they are directly related.

At brass tacks, Conroe will be a 65nm dual-core processor with 4MB of Level 2 cache based

on the Core 2 microarchitecture. The chip will have a 1,066MHz front side bus and is pin-compatible with the Intel LGA775 socket.

A firm release date, and indeed — final clock speeds for the Core 2 Duo processor, have not been disclosed. Intel reps are confident we will see the processor in Q3 2006, with the Xeon replacement (Woodcrest) hitting the market first and Core 2 Duo notebook replacement (Merom) due after Conroe. All three major CPU segments; desktop, notebook and x86 servers, will all be based on the Core microarchitecture for the foreseeable future.



Core 2 Duo will be pin compatible with socket 775.

The New Architecture

The Core microarchitecture has five major technology differences from its direct ancestor, the Yonah. They consist of Wide Dynamic Execution, Intelligent Power Capability, Advanced Smart Cache, Smart Memory Access and Advanced Digital Media Boost. Though the five sections cover different areas of a CPU's design, the aim of a faster, cooler and more efficient processor is contained in these areas:

Wide Dynamic Execution

The Core microarchitecture is fundamentally different from the current-generation Netburst architecture used in the Pentium 4 and Pentium D processors. Where Netburst-based chips include a very long and narrow 31-stage instruction pipeline (great for streaming data and multimedia, but inefficient with incorrect branch predictions and cache misses), the Core microarchitecture has been cut back to a 14-

stage pipeline. So if the processor missteps, it takes half as long before the CPU is ready to try again. The branch prediction algorithms have been tweaked to be more accurate.

To cope with more instructions for the shorter pipeline, Core microarchitecture has had another execution unit added (for a total of four), meaning the CPU won't be waiting for instructions when it completes a workload. The instruction buffer has also been upgraded to hold 96 units.

All of this would be laudable by itself, but Intel has attempted to further streamline the instruction queue using a technology called Macro-Fusion. This tech scans the instruction queue and pairs instructions that can be performed simultaneously.

Most instructions do need to be run separately, and anecdotally Intel assumes one in fifteen instructions can be combined. Though it sounds like more misses than hits, removing

a whole instruction once every fifteen executions makes a load of difference.

Advanced Smart Cache

The cache for Core 2 has been bumped up to a very respectable four megabytes and like Yonah is a combined cache for both CPU cores. As we mentioned in the first look at Yonah, this makes a large difference when data is passed from one core to the other, as the data does not need to "drop back" into system memory to get passed on (as is the case with the Pentium D). The Core 2 has this smart cache but adds the ability for the chip to dynamically allocate the cache between the two cores, giving more cache to one core over the other if it's required. Of course, when more cache is available to a given core, it reduces the likelihood that the data won't be in cache when it's needed, speeding up overall performance again.

How Intel's chip stacks up

All of us here at APC have been waiting patiently to get our hands on a Core 2, to see if all the fuss Intel has been making for the past twelve months was justified. Though we haven't had the CPU in the APC Labs for a thorough going over, a sneak peek was organised with Intel in Singapore. Two hours of hands-on with the new chip gave us time to run a bunch of benchmarks, both synthetic and real-use. We're impressed.

The test system was an Intel D975XBX Desktop Motherboard loaded with a Core 2 Duo running at 2.66GHz — from our understanding, this will be the top-of-the-line speed on launch and titled the Core 2 Duo Extreme processor. The system was also fitted with 1GB of Corsair DDRII 800MHz with 4-4-4-12 timings and an ATI Radeon X1900 Crossfire paired with an X1900XTX in CrossFire mode. A single Maxtor DiamondMax 100GB SATA1 drive acted as storage.

Starting with PCMark05, the system rocked a Labs record with a score of 7,380 — a combined CPU (6,668) and Memory (5,620) score only, with HDD and graphics not taken into account. This is astounding performance for a very high-end (but unmodified) system. A 3DMark06 score of 9,720 confirmed the power of the test system.



TWO HOURS OF HANDS-ON GAVE US
TIME TO RUN A BUNCH OF BENCHMARKS.
BOTH SYNTHETIC AND REAL-USE

Smart Memory Access

Out-of-order execution is a central ability of modern processors, but the base instructions for reading and writing to memory are ordered. For example, you wouldn't read data from a memory location before you write data there; the data stored would be out of date or written over. Intel's Smart Memory works around this by scanning the read and write instructions to memory and performing loads that are not dependent on stores which are waiting for execution. Basically, it dynamically re-arranges the memory queue to load data not dependent on previous instructions first. The process is called memory disambiguation and increases the data available for parallelisation — keeping the CPU fed with data as much as possible. Core 2 also has improved pre-fetch units: two in the Level 1 cache and two in Level 2 for each core of the CPU. With the optimisation of memory access, plus increases in the effectiveness of the

We tested the system with built-in time demo benchmarks — a poor way of showing actual performance but, relative to other results given in APC, it shows how the system stacks up. Far Cry Research level earned a score of 399.7 frames per second and the Volcano level clocked it at 413fps. Quake 4 with SMP turned off scored 189.1fps and with SMP turned on scored 282.5fps. The F.E.A.R. time demo, normally pretty rough on systems, cruised through at 214fps.

Real-world benchmarks further cemented our excitement for this product. Using DVDShrink 1.5, a complete movie (*The Return of the Jedi*) was re-encoded from 8.5GB to 4.5GB in four minutes, 23 seconds. Windows Media Encoder encoded a 416MB AVI to HD WMV in eleven minutes, 56 seconds. For MP3 we encoded a 700MB WAV file into 128Kb/s MP3 using LAME in two minutes, 49 seconds using a single core, and one minute, 54 seconds (both cores).

Frankly, Core 2 Duo is going to shake up the boat in the desktop market when it's released in Q3 this year. Expect more coverage from APC when more chips are available for testing.

pre-fetch units, Intel regard these improvements as "hiding" latency to the memory bus.

Advanced Digital Media Boost

Intel's Netburst microarchitecture was built around streaming data, optimised for multimedia specifically. Though Netburst is now gone, Intel is still working on digital media enhancements in the Core 2 microarchitecture. Streaming SIMD Extensions (SSE) are specialised instructions built into the CPU itself to work with multimedia files and rich data sets. SSE instructions are 128-bit, and are normally executed over two cycles as 64-bit lumps. The Core 2 microarchitecture can process a whole 128-bit instruction in one clock cycle — twice as efficient as the Netburst microarchitecture.

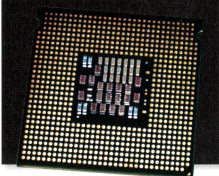
Intelligent Power Capability

Pentium 4 and Pentium D processors were accused of being too hot — and rightly so! With



Codename: Merom

Though the Core Duo processor for notebooks hasn't been out long, its time is running out. The Core 2 iteration of the processor, Merom, will launch not too long after Core 2. APC was given some hands-on time with some Merom-equipped notebooks — it's well on track to making the Core Duo look positively ancient. Though APC did benchmark a Merom system, an NDA forbids us from divulging results for this not-quite-complete chip.



INTEL CORE 2 DUO BENCHMARKS

PC Mark 05	7,380
3D Mark 06	9720
Far Cry Research	399.7fps
DVD Shrink encode*	4m 23s
MP3 encode**	1m 54s

* Complete movie re-encoded from 8.5GB to 4.5GB

** 700MB WAV encoded into 128Kb/s

a thermal design profile (TDP) of 135 watts, the Pentium family was becoming too unwieldy to cool quietly and counted itself out of contention for use as a mobile processor. The Core 2 has had a number of features added to cut down on the power required and thus the heat output by the chip.

The TDP of the Core 2 is less than half of the Pentium D at 65 watts. Of course, the Core 2 is most closely related to a mobile CPU, so working from an initial lower heat profile was beneficial, but further enhancements were made to keep it cool and fast. Smart Clock Gating allows for sections of the processor to be shut down when not in use, saving power, while even the transistors themselves swap to a default sleep state when not actively in use. Enhancements in the production of the chips also come into play, with low-K dielectric processes and more metal layers added in for better movement of heat out of the cores.



AMD's AM2

AMD has updated its Athlon 64 range with a new CPU socket and DDR2 support. *John Gillooly* examines the changes.

On the day before Intel announced 64-bit support in its Pentium 4 processors, AMD sent packages to Aussie journalists. Inside was an AMD notepad, pen and a short note explaining it had been over a year since AMD launched 64-bit desktop computing. It then encouraged us to celebrate by using the clearly branded notepad the next day.

It's symptomatic of the cheekiness with which the number two CPU maker approaches the hearts-and-minds battle for desktop processing. But underneath the marketeering lies a company with a strong product line and a loyal following that has been making steady inroads into Intel's bread and butter processor market for years.

With the gag-inducing flood of hypercoloured Viiv marketing and the more serious deployment of Core Duo notebooks, it's easy to see 2006 as a year dominated by Intel. But, AMD is also at a serious transition point as it deploys its socket AM2 CPU platform. After last year's launch of dual-core Athlon 64 X2 CPUs, AM2 marks the second major update to the Athlon 64 line.

At heart it involves an updated memory controller. Unlike Intel, who made an aggressive transition to DDR2 memory in mid-2004 with the i915 chipset, AMD stuck with the incumbent DDR400 memory for its processors. By taking the memory controller out of the Northbridge and placing it in the CPU itself, AMD managed to gain significant performance from this mature memory standard and saw no need to go for the expensive (and slower) DDR2 option. Now is the time for it to make the transition, with support for DDR2 800 now built into the CPU architecture.

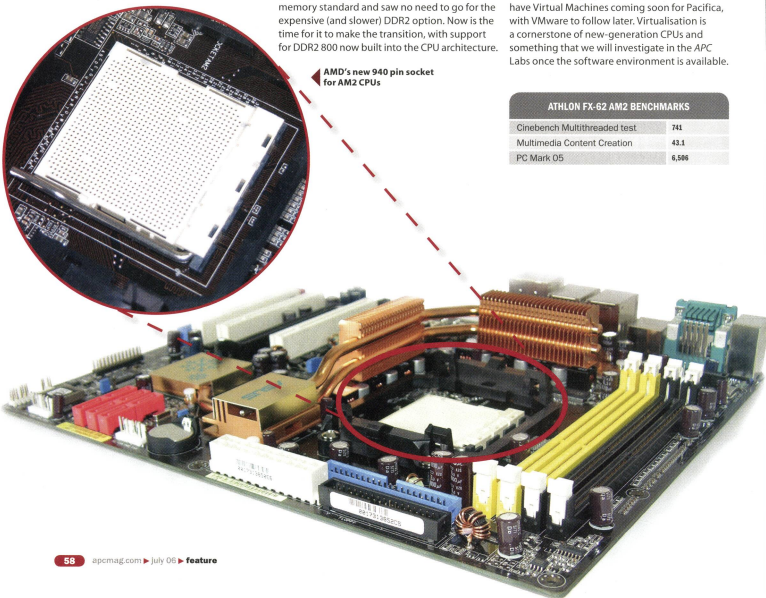
Unfortunately, the new DDR2 memory controller needs the CPU to have an extra pin. This has necessitated one of the most annoying upgrade cycle breakers, a new CPU socket. This socket features 940 pins, allowing not only the memory controller but future expansion to quad-core CPUs. (It is not backwards-compatible with the first-generation Socket 940 Opteron and Athlon 64 FX CPUs). The plan from AMD is for AM2 to have a three-to-five year life cycle, (lasting end users through at least one upgrade).

Besides changing memory type, AMD has also added its Pacifica Virtualisation technology to the AM2 CPUs. At the moment, this is still unsupported by the necessary Hypervisor software packages, however Zen and Microsoft have Virtual Machines coming soon for Pacifica, with VMware to follow later. Virtualisation is a cornerstone of new-generation CPUs and something that we will investigate in the APC Labs once the software environment is available.

AMD's new 940 pin socket for AM2 CPUs

ATHLON FX-62 AM2 BENCHMARKS

Cinebench Multithreaded test	741
Multimedia Content Creation	43.1
PC Mark 05	6,586



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Benchmarks



There are four types of AMD consumer processor to receive the DDR2 upgrade. In socket AM2 there are new models of Athlon 64 FX, Athlon 64, Athlon 64 X2 and Sempron CPUs. There is also a dual-core DDR2 mobile CPU that AMD recently launched, dubbed the Turion 64 X2, which is architecturally the same — apart from a slower HyperTransport bus and some power-saving technology.

We have spent an extensive amount of time with the new Athlon 64 FX-62 CPU.

This was tested in an ASUS MN32-SLI Deluxe motherboard with 1GB of Corsair XMS2-8500 TwinX memory and a GeForce 7800GT graphics card. Our testing has been compared to the previous-generation Athlon 64 FX-60. We were unable to run direct comparisons between the FX-62 and Intel's Conroe-based Core 2 Duo Extreme due to a lack of AM2-based CrossFire-supporting motherboards.

Our first testing was done in Cinebench, the FX-62 scoring 741 in the multithreaded test,

compared to 690 on the FX-60. The performance boost was not as noticeable in the Winstone Multimedia Content creation benchmark however, with a 43.1 barely beating the FX-60.

In PCMark05 the trend continues, with the FX-62 scoring 6,506 PCMark05, a minor improvement on its predecessor. In fact, all that the benchmarks reinforce is that the socket change is business as usual for AMD and performance will continue to scale as it has since the Athlon 64 first hit the scene.

Verdict

The AMD results are highly predictable, considering that there have been only minor changes to architecture. It is important to note that DDR2 actually offers higher latency than DDR — it is not a performance-focused upgrade, but rather DDR2 offers much better support for high-memory capacities than DDR. Which means that the 2GB of RAM you'll need to get the most from Windows Vista will run reliably — without occupying every DIMM slot on the motherboard.

When taking the Core 2 Duo benchmarks into account, it looks like AMD's days of performance dominance might be coming to an end. We've been waiting to see Intel play catch-up ever since AMD got the next-generation jump on them with the Athlon 64's 2004 launch. We now see a reverse of what has happened before — AMD is the technology leader putting a minor product revamp through (while Intel is the upstart, yelling loudly about how great its new architecture is).

While Intel bombards us with the computer-as-a-platform mantra, AMD is continuing to do what it does best — make CPUs. With AM2, it is positioning the Athlon 64 line for the future, preparing it for increased memory capacity, virtualisation and the eventual introduction of even more CPU cores. Whether this is enough to defeat Core 2 Duo in the long term remains unknown, but Intel's hastening of that launch to beat AM2 hints that the platform games are only just beginning. [EUTE](#)



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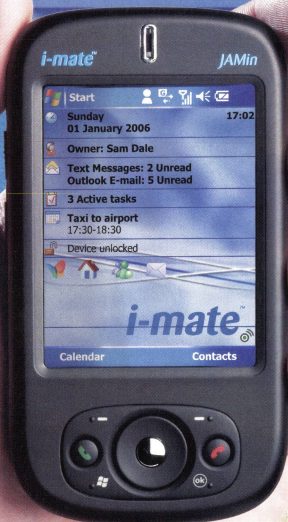
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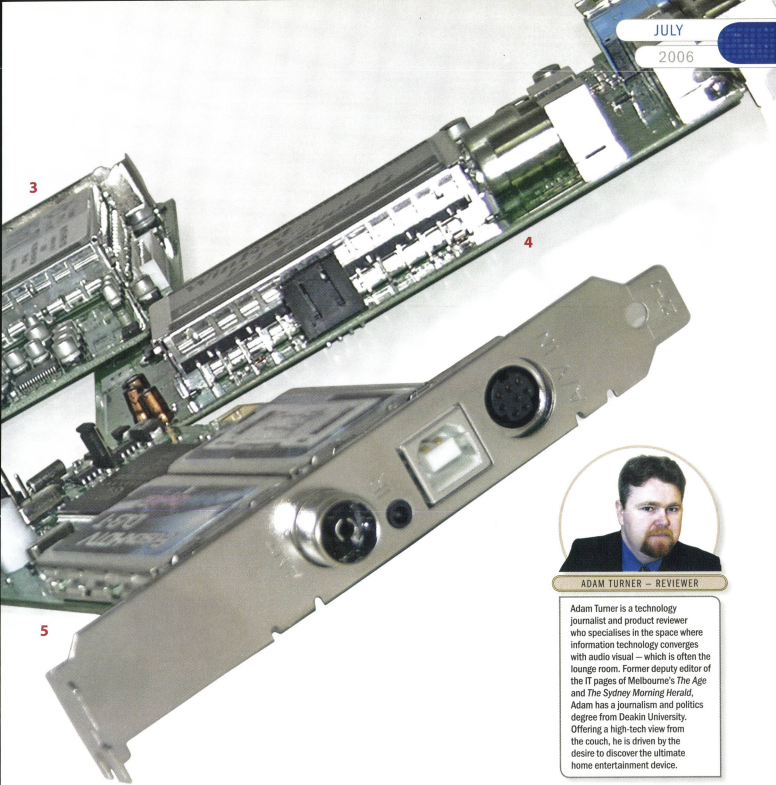
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High-def heaven

Adam Turner gears up for some HDTV action and compares the latest crop of high-definition TV tuner cards that turn your PC into a TV.





ADAM TURNER – REVIEWER

Adam Turner is a technology journalist and product reviewer who specialises in the space where information technology converges with audio visual – which is often the lounge room. Former deputy editor of the IT pages of Melbourne's *The Age* and *The Sydney Morning Herald*, Adam has a journalism and politics degree from Deakin University. Offering a high-tech view from the couch, he is driven by the desire to discover the ultimate home entertainment device.

THE players

five cards TESTED

VENDOR	MODEL	PRICE	ONLINE	PHONE
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2. Leadtek	WinFast DTV1000 T	\$109	www.rectron.com.au	(03) 9561 6166
3. Leadtek	WinFast DTV2000 H	\$139	www.rectron.com.au	(03) 9561 6166
4. Hauppauge	DigitalVision-HD	\$299	www.newmagic.com.au	(02) 9528 4555
5. DViCO	FusionHDTV DVB-T Dual Digital	\$325	www.lakopacific.com	1800 657 601



High-definition television is seen by many as the holy grail of home entertainment, with wide-screen glory, exquisite detail (and a horrendous price tag). Not only do you get a better picture, but the benefits of digital allow for electronic programming.

Thankfully, as with many new technologies, the humble PC offers a relatively cheap and easy entry into the world of HDTV. HD digital comes in three flavours — 576, 720 and 1080 — according to the number of horizontal lines in the image. It's better than DVD-quality, but the actual quality of HD on TV you'll find differs from station to station (see *High-definition TV in Australia*).

To experience the benefits of HDTV you need a television or monitor capable of displaying it. The "HD ready" tag can be misleading — this can mean a display capable of accepting a HD signal and downconverting it. If you want to watch 1080i in all its glory, you need a true HD display with at least 1,080 vertical pixels.

The technologies that are really revolutionising the way we watch television are personal video recorders and time

shifting — such as pausing live TV. While you can buy PVRs as standalone devices, currently the only way you can get a PVR with digital tuners (and an electronic program guide which has a hard drive and a DVD recorder) is to build it using a computer. A dual analogue/digital tuner is useful as a fallback because digital reception can still be flaky at times (and a poor signal causes the picture to freeze).

Windows XP Media Center Edition (MCE) is only sold with pre-built computers, but if you want to do it yourself there are a number of HDTV tuner cards on offer. The minimum computer specs for the PCI HDTV tuner cards that we tested are 1.6 to 1.8GHz with at least 256MB of RAM (but you really want much more). For example, the Pinnacle card recommends a 2.8GHz processor for HDTV — and we'd throw in at least 512MB of RAM.

INITIAL SETUP

We put five PCI cards to the test — Leadtek's WinFast DTV1000 T and WinFast DTV2000 H, along with Pinnacle's PCTV 310i, DViCO's FusionHDTV DVB-T Dual Digital and the DigitalVision-

HIGH-DEFINITION TV IN AUSTRALIA

As is the case with many new technologies, there's a confusing number of formats. **Standard-definition** (SD) digital offers roughly the same picture quality as analogue, but mostly in wide-screen. **High-definition** (HD) digital comes in three flavours — 576, 720 and 1,080 — according to the number of horizontal lines in the image. This number is followed by an "i" for interlaced or "p" for progressive, sometimes followed by the number of frames per second — usually 50 or 60. **Interlaced** only displays every second horizontal line, rapidly switching between the odd and even numbered lines. **Progressive** displays every line at once, creating a sharper picture.

In Australia, SD is 576i and HD is 576p, 720p or 1,080i — even though 576 isn't considered true HD in most countries. In comparison, DVD is 480i or 480p. All Australian television networks simulcast in analogue and SD, plus at least 20 hours per week in some form of HD. The Nine Network broadcasts in 1,080i with Dolby Digital 2.0 or 5.1 sound, while Ten offers 1,080i with only Dolby Digital 2.0. Seven only transmits in 576p with MPEG or Dolby Digital 2.0 sound. The ABC and SBS are allowed to "up-convert" SD 576i to 576p, the ABC using Dolby Digital 2.0 or 5.1 and the SBS using MPEG.

Currently, the only real benefit of digital television is image and sound quality, as television networks refuse to offer extra features like multi-channel broadcasting or a seven day electronic program guide.

HD (a Hauppauge card bundled locally with ShowShifter software).

When weighing them up, first consider their physical size — if you're building a small home theatre PC (HTPC). Of the five cards tested, only the Pinnacle and the DViCO are low-profile PCI (only 60mm high instead of 100mm); the DViCO is the longest of the five (at 160mm) and the

Pinnacle the shortest, at 120mm. When it comes to features, the WinFast DTV1000 T and DigitalVision-HD are at a distinct disadvantage because they only have one onboard TV tuner. The WinFast DTV2000 H and the Pinnacle have one digital tuner and one analogue tuner, while the DViCO has two digital tuners. Having two tuners isn't essential, but it does allow you to record two programs at once.

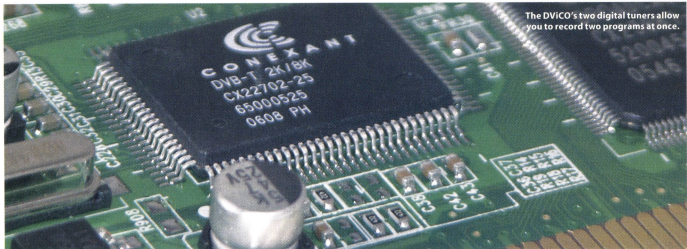
All five cards were straightforward to install and set up. Each comes with an



AS WITH MANY NEW TECHNOLOGIES, THE HUMBLE PC OFFERS A RELATIVELY CHEAP AND EASY ENTRY INTO THE WORLD OF HDTV



With yet another remote for the coffee table, perhaps it's time to buy "one remote to rule them all".



The DVICO's two digital tuners allow you to record two programs at once.

infra-red remote control and features inputs for recording from composite and S-Video sources, as well as an aerial input.

The Pinnacle, DigitalVision-HD and WinFast DTV2000 H have a second input for an FM aerial, while the WinFast DTV2000 H also has a third for cable TV. Strangely the DVICO needs to be plugged into a USB port for the remote control and Picture in Picture features to work, but it redeems itself by being the only card capable of starting up the computer in order to record a program (by running the wires

to the computer's power button through the DVICO card). The other cards can only wake your computer if it's in standby or hibernate mode.

INTERFACE

If you're building a lounge-room PC, you need to be able to read the menus from the couch — what's known as a 10ft interface. The software supplied with the two WinFast cards (which is practically identical) and the DVICO doesn't pass the 10ft test and is best suited to a desk-bound computer. None of these

three play DVDs or CDs, but the WinFasts come with PowerDVD 6 for such tasks. Of these three, only the WinFast DTV2000 H plays and records FM radio, while only the DVICO plays internet radio.

The DigitalVision-HD is bundled with ShowShifter, which is designed with HTPCs in mind and sells separately for £29.99 (approx \$75, www.ShowShifter.com). ShowShifter works with most TV tuner cards but, disappointingly, it can't utilise the second tuner on a dual-tuner card yet — which is why it comes with a single tuner card. The Pinnacle is also lounge-room friendly, handling dual-tuners and using Pinnacle's own MCE-like interface. Both applications also handle DVDs and CDs as well as a range of audio, video and image files. Pinnacle is really aiming for an all-in-one software suite — it also plays FM radio and internet radio stations (plus it can even manage your digital photo library).

All the cards have a manual scheduling feature, but the electronic program guide function is completely useless — because the networks refuse to embed a seven-day EPG in their broadcasts. The exception here is ShowShifter, which can

download EPGs from the internet, such as Australia's IceTV (www.iceTV.com.au).

REMOTE CONTROL

The supplied remote controls vary from ugly to hideous but, if you're building a HTPC, you're probably better off ditching the remote anyway in favour of a decent universal learning remote control. The WinFast remote control has separate "stop playing" and "stop recording" buttons — an extremely useful feature to ensure, if you're watching one file while recording another, that you don't accidentally stop recording instead of stop playback. The DVICO remote is the ugliest of the lot, but that's because it's designed to work with Windows XP MCE and has extra buttons such as a Windows button.

As for bundled software, the DigitalVision-HD comes with nothing but ShowShifter, while the DVICO comes with VideoStudio 8 SE DVD, and the Pinnacle with Pinnacle Studio 9 QuickStart. The WinFast cards come with an impressive suite: VideoStudio 9 SE DVD, COOL 3D SE, DVD MovieFactory 4 SE, PowerDVD 6 and muvee 3.

IS TIME SHIFTING LEGAL?

Since 1980, specific legal provisions have been in place in Australia which permit people to make copies of television broadcasts for private and domestic use. Australian copyright laws do not permit people to make copies of movies, music, books or any other protected works without the permission of the copyright holder.

TV programs are different. It is legal to make a copy of a TV program. The only restriction placed on the copying of a TV program is that the copy must be made for private or domestic use only.

In the past, this has not been a problem for the TV programmers because making further copies from a VCR is usually slow, difficult and the quality decreases. HDTV allows TV programs to be copied multiple times, quickly and without any decrease in the quality of the program. TV programmers are now unsure about how much control they'll have in the future over the distribution of their programs.

Nathan Mattock is a senior associate at Gadens Lawyers' Sydney Office. He specialises in intellectual property and litigation. His contact details are: Phone (02) 9931 4966 or email nmattock@nsw.gadens.com.au.

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**RECORDING QUALITY**

When it comes to digital TV tuners, there's little if any difference in sound and picture quality. All five produced an extremely crisp Kerri-Anne Kennerley in the mornings — one of the few shows broadcast in 1080i. You could see the difference when switching between Nine's SD and HD channels — the image was sharper with all five and you could make out finer details,

such as people's eyelashes. All five cards had our Logitech surround sound speakers pumping when watching movies.

Each card records in MPEG-2 and all but the DigitalVision-HD also record in transport stream — allowing you to record each channel of a multi-channel broadcast. The Pinnacle and DigitalVision-HD can record in MPEG-4 (DivX), while the Pinnacle and WinFast cards will also record directly to DVD. Each card lets

you pause live TV, but only the DVICO has an automatic buffer for rewinding live TV. None let you watch the start of a program while still recording the end.

Our Dell test rig, on a fresh XP Pro install, used 119MB of RAM when sitting idle. The DVICO card pushed this up to 300MB when watching HDTV, while the others sat around 200 to 220MB. CPU usage was acceptably low, with the DVICO sitting around 10 per cent (while the others used

about 20 per cent). Despite this, the WinFast software with both cards occasionally choked when recording — and the software didn't seem as solid as the others.

THE WINNER

Due to various strengths and weaknesses, there's isn't one standout card here — so choosing what's best for you is a process of elimination.

It's tempting to ditch the WinFast DTV1000 T and DigitalVision-HD straight away because they've only got one tuner. Next, eliminate the WinFast DTV2000 H and the DVICO, because they don't have lounge-room friendly interfaces — which



WHEN IT COMES TO DIGITAL TV TUNERS, THERE'S LITTLE IF ANY DIFFERENCE IN SOUND AND PICTURE QUALITY

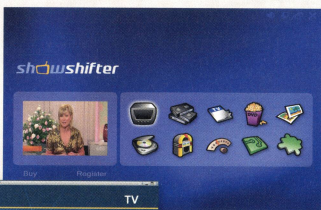
EPG SOFTWARE

An electronic program guide lets you flick through the week's programs and choose what you want to record, plus it lets your personal video recorder automatically check the guide for your favourite shows. The software supplied with most digital TV tuner cards, as well as most standalone hard drive and DVD recorders, can extract a seven-day EPG from the television signals.

Annoyingly, Australian television networks only broadcast what's on now

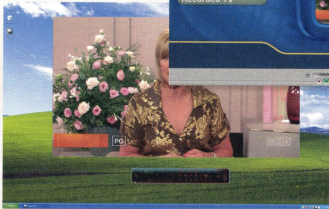
and what's on next (which is often wrong anyway). Some computer-based PVRs get around this by downloading an Australian EPG from the internet — the most popular of which is IceTV (www.ice.tv.com.au) which costs around \$3 per week.

Windows XP Media Center Edition and ShowShifter both work with IceTV, but the software bundled with most TV tuner cards won't. Only a handful of standalone PVRs, such as those from Topfield and Legend, work with IceTV.



The Pinnacle's MCE-like interface is lounge-room friendly.

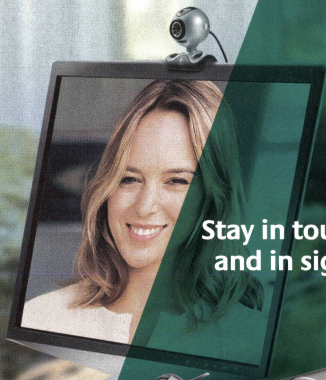
Unfortunately, the DVICO interface doesn't pass the 10ft test.



ShowShifter works with most tuner cards, but can't utilise a second tuner on a dual-tuner card.

Ah, sweet Kerri-Anne: perfect in either SD or HD.





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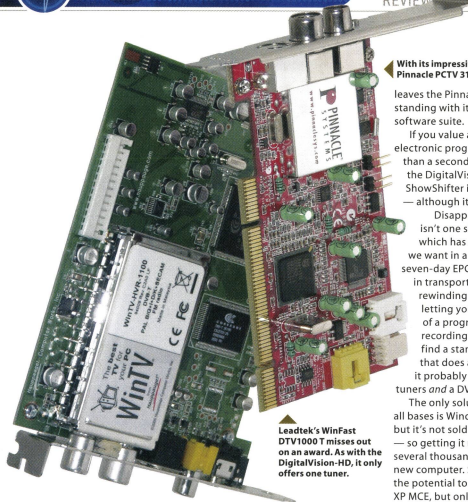
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With its impressive software and interface, the Pinnacle PCTV 310i was the best card tested.

leaves the Pinnacle the last man standing with its impressive software suite.

If you value a seven-day electronic program guide more than a second tuner, then the DigitalVision-HD with ShowShifter is a good choice — although it is expensive.

Disappointingly, there isn't one single offering which has all of the features we want in a PVR — like a seven-day EPG, recording in transport stream, rewinding live TV (and letting you watch the start of a program while still recording the end). If you find a standalone device that does all this,

it probably won't have digital tuners and a DVD burner — yet. The only solution that covers all bases is Windows XP MCE, but it's not sold separately — so getting it means spending several thousand dollars on a new computer. ShowShifter has the potential to match Windows XP MCE, but only time will tell.

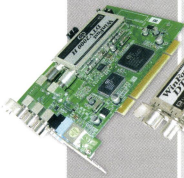


Also, don't forget it's not worth paying extra for any HD tuner card (over an SD card) if you don't have a display that will do HD justice. [ETC](#)

HOW WE TESTED

To put plenty of grunt at the cards' disposal, we tested them with a Dell Dimension 9100, running XP Pro (with SP2) on a Pentium D 2.8GHz processor under the bonnet — accompanied by 2GB of RAM, an Nvidia GeForce 7800 GTX, Sound Blaster X-Fi XtremeMusic and a 400GB SATA 7,200rpm hard drive. It was connected to a Dell 2405FPW 24in wide-screen monitor (set to run at its native 1,920 x 1,200 resolution) and a Logitech Z-5450 digital 5.1 surround sound speaker system.

To test the picture and sound quality, we tuned into a range of programs including *Mornings with Kerri-Anne* — which is broadcast in 1080i and runs for two hours (long enough to install and test all five cards within the same program).

Leadtek's WinFast DTV1000 T misses out on an award. As with the DigitalVision-HD, it only offers one tuner.

	LEADTEK WINFAST DTV2000 H	LEADTEK WINFAST DTV1000 T	PINNACLE PCTV 310i	DVICO FUSIONHDTV DVB-T DUAL DIGITAL	HAUPPAUGE DIGITALVISION-HD
INTERFACE	PCI	PCI	Low-profile PCI	Low-profile PCI	PCI
INPUTS	Aerial; composite video; S-Video; 3.5mm audio.	Aerial; cable; FM; S-Video; composite video (via adaptor); 3.5mm audio.	Aerial; FM; S-Video; composite video (via adaptor).	Aerial; S-Video; composite video; L and R audio (both via adaptor).	Aerial; FM; composite video; S-Video; 3.5mm audio.
					
	Cheap; FM radio.	Cheap.	Great software; 10ft interface.	Can start the computer.	Excellent software; Australian EPG-compatible.
	Average software; no 10ft interface.	One tuner; average software; no 10ft interface.	No EPG or ShowShifter's advanced features.	Expensive; no 10ft interface.	Expensive; one tuner.
Verdict	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

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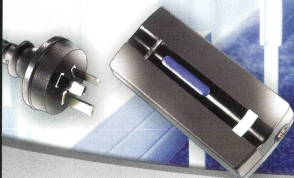
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Network storage devices

Out of disk space? That cleanup wizard won't help. *Nick Race* looks at five network storage devices to give you more gigs.



THE players

five nas boxes

TESTED

VENDOR	MODEL	PRICE	ONLINE	PHONE
1. Buffalo	TeraStation	\$1,799	www.uniden.com.au	(02) 9599 3355
2. iomega	StorCenter	\$449	www.iomega.com	1300 734 154
3. Linksys	Network Storage Link	\$189.95	www.linksys.com.au	1800 678 808
4. Maxtor	One Touch III	\$1,199	www.maxtor.com	(02) 9201 6111
5. Western Digital	NetCenter	\$599	www.westerndigital.com	(02) 9648 2060



Adding more storage to a PC is a simple case of plugging in another hard disk drive. But what if the PC is under warranty so you can't open the box — or it doesn't have room for another disk inside? Now, adding USB 2.0 or FireWire-driven disk storage is an option, but if you want to share that data between multiple PCs then things can become more difficult.

APC had a trawl through the masses of products available which can add storage to your network. We narrowed it down by only including products that:

1. Came with disks already installed;
2. Included backup software for keeping data safe; and
3. Had a decent amount of storage — 20GB isn't nearly enough!

We sourced devices from Iomega, Maxtor, Western Digital, Buffalo and Linksys, though not all are basic network attached storage (NAS) boxes. We included two devices that aren't strictly NAS — but which still make an impact on the market. One is a NAS enabler for USB 2.0 drives, and the other, the king of USB attached storage. Of course, those two products can be combined for traditional results similar to a traditional NAS box.



NICK RACE — LABS EDITOR

Nick Race is APC's Labs Editor. He has been benchmarking and testing PC equipment full-time since 2004 and views every product with a critical eye. Apart from specialising in x86 server hardware and desktop/business storage products, Nick is also responsible for the smooth running and pertinent testing in the APC Labs. Nick's lifelong passion for technology drives him to pull things apart (and see what makes them tick).

THE CONTENDERS

The Iomega StorCenter is an Ethernet storage box with a built-in USB print server and software support for Foldershare (more on that later). It holds 250GB (229GB formatted) and would fare quite well in a backpack or briefcase.

Maxtor sent its OneTouch III device, featuring four 250GB drives for one terabyte of unformatted storage, 931GB formatted. Maxtor uses EMC Retrospect HD for system, file or directory backup in both incremental and straight stores. The OneTouch III is the only device

A 1TB Buffalo TeraStation HT-HDGL0A9 is also sourced, and this by general consensus is the most powerful NAS device on a small budget. The TeraStation includes SMB-level security for use and group restrictions, the ability to join a domain and to RAID its disks in data-safe RAID 5. The TeraStation also supports AppleTalk protocol and can email the administrator in case of errors. Windows and Apple USB print serving is offered and an anonymous and user-restricted FTP service can be configured. The device can be used in

backup software. Like the Iomega, it's a single-disk solution; RAID isn't supported. It holds 297GB formatted.

The Linksys Network Storage Link (NSLU2) is an extremely popular product currently in the market — and a huge win with the tweaker crowd. It is basically a USB-to-Ethernet adaptor that automatically shares USB keys and disk drives onto a network. It's Linux-powered, hence it is open source, with a few user-created kernels available to change its functionality. It comes with no software, apart from its setup



SOFTWARE BUNDLED WITH NAS DRIVES CAN MAKE OR BREAK THE DEAL. AFTER ALL, YOU WANT TO MAKE THE MOST OF YOUR STORAGE

that cannot plug directly into the network; however, it offers connection via USB 2.0 and FireWire 800 — both high-speed connections for desktops or servers. The OneTouch III is used primarily for use with high-capacity media files — like video, audio and photos for professionals (but nothing about the unit limits its use to that purpose). The OneTouch III supports both RAID 0 and 1 but can't present the disks individually. Strong software support for both Windows and Mac OS is present.

conjunction with a Buffalo HD Media Adaptor for media playback, but this functionality was not tested. Formatted in RAID 5, it holds 699GB.

Western Digital submitted a NetCenter 320GB Network Drive for our testing. This device is a basic NAS box with a 10/100 Ethernet connection. It can also act as a USB print server and comes packaged with EMC Retrospect Express, the basic version of EMC's Retrospect

utility, and does not contain any usable storage of its own. Our main argument against this device is that it stops attached USB hard disk drives from being portable. The first time a USB hard disk is connected, the drive is reformatted in a file system that isn't read by Windows or Mac OS.



Backup solutions: the NAS devices APC tested come in all shapes and sizes.

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**INCLUDED SOFTWARE**

Software bundled with these NAS drives can make or break the deal. After all, you want to make the most of the storage added to your network, and the device itself needs to be easy to maintain. Some of these units come bundled with backup software — changing the device from just dumb disk space into a valuable tool for protecting data.

The Iomega comes with three main packages, Automatic Backup Pro — which backs up files, directories or drives off multiple PCs (only) and allows for a full recovery from the device in case of failure. The install CD acts as the recovery disk, so keep it close. The backups can be run incrementally,

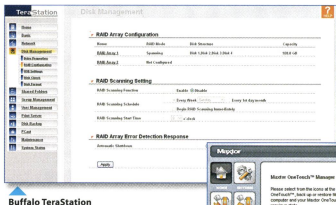
time-based (from every hour) at a set time or manually initiated. Next is Foldershare, which allows files to be shared over the internet from the device or your PC. It allows synchronisation with remote folders on any remote PC and uses RSA signed AES encryption over SSL on any file transferred via the internet. Foldershare is a third party Windows Live service (operated by Microsoft) so dynamic IP addresses aren't an issue, as long as your internet connection is online. None of your data is stored at Foldershare, so privacy and security are maintained. Windows Desktop Search can integrate with the Foldershare software, enabling full search capabilities through

a remote browser. Pretty nifty. Last is the simple Discovery Tool, which is used for initial setup by identifying the drive and assigning it a drive letter on your PC. It can also be used to rename the StorCenter. This is a strong showing from the Iomega device.

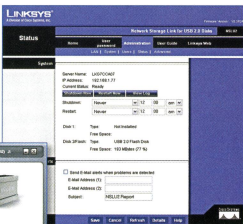
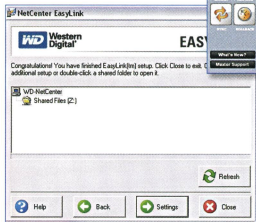
The Buffalo Terastation is similarly applauded. The unit comes with Windows Easy Backup software to store data from client PCs. This lightweight backup software supports incremental backups on a scheduled time period. It's free to use with the Terastation and multiple PCs can have the software installed on your network. It doesn't support a full PC backup, just selected files and directories. The Terastation's basic

configuration utility shunts the user to a web-based configuration menu with stacks of options for the administrator. As previously mentioned, the device supports a complex network infrastructure and these settings can be made here in a logical manner. The device's disks can also be configured (into RAID, formatted or checked) and backups to other Terastations on your network can be established.

The Maxtor OneTouch III uses EMC's Retrospect HD Edition software. The Retrospect product is a well-established and highly respected backup solution at nearly all levels of computing. This version is extremely straightforward to use.



Buffalo Terastation

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MODEL	14MB IN SECS	TRANSFER KB/S
0	40	
Iomega StorCenter	33.6	427
Maxtor One Touch III	1.8	7964
Linksys Network Storage Link	4.6	3116
Western Digital NetCenter	2.7	5309
Buffalo TeraStation	4.6	3116

Upon installation of the software, it's automatically configured to backup the entire PC once a day direct to the OneTouch unit. Files and directories can also be specified as backup criteria if you don't want your whole PC stored. The OneTouch unit is named so as it has a single button on the front; when pressed it will perform its backup duties on demand (or launch a custom application, if you so desire). The Maxtor's configuration software is also easy to use — apart from changing the drive configuration and some performance switches, there isn't much to it.

The Western Digital NetCenter is a straightforward device. That doesn't mean it's lacking quality or

performance though. The inclusion of EMC's Retrospect belies its somewhat serious origins; even this Express version is quite powerful. It supports backup of the full system, directories or folders both incrementally and totally on a time-based system.

Interestingly, WD make the source code for the NetCenter freely available under the GPL, meaning programmers can customise the unit to their liking. Included is an application called EasyLink, which assigns the NetCenter a drive letter on the system, making access to files easier.

The Linksys' NSLU2 Network Storage Link doesn't really offer much in the way of software, though a comprehensive

HOW WE TESTED

All devices were connected to a PC via a Micronet 10/100/1000 switch using Cat5e cable or directly using a shielded USB 2.0 certified cable. The speed tests were performed by transferring a 14MB file to the device using Windows Explorer (and timed manually). Results were averaged over multiple runs. For speed testing, devices were configured for the most reasonable disk performance vs data security. Either RAID 1, RAID 5 or disks singularly presented.

administrator panel is built in to the unit — accessible via HTTP. It enables private and public sharing of disks (not at the folder level) through users and groups.

THE VERDICT

All the devices tested do what they're designed to do, but we have a particular niggles about the LinkSys Network Storage Link. Though it's a great idea for quickly and easily adding storage to a network using USB drives, the fact that the drives are then locked to the device, and can't be used in Windows machines without a reformat, seems — well — stupid. The Maxtor OneTouch III is clearly a very polished and extremely

fast product, thanks to its local link. Bear in mind that it's not suited to sharing between multiple users. The Buffalo TeraStation and the WD NetCenter are both top-notch NAS devices, with the TeraStation earning kudos for its huge capacity (up to 2GB) and the NetCenter for the bundled EMC backup software. The TeraStation's backup software could be better. The Iomega, despite its smaller capacity and not-so-amazing backup software, has an outstanding feature in the online file sharing software that works seamlessly with the unit. Unfortunately, it was by far the slowest of the bunch (by a factor of 10), and repeat testing and reinstallation of the software could not explain its creeping pace. **BTG**

	BUFFALO TERASTATION	IOMEGA STORCENTER	LINKSYS NETWORK STORAGE LINK	MAXTOR ONE TOUCH III	WESTERN DIGITAL NETCENTER
Capacity	1TB	250GB	N/A	1TB	320GB
Interface	10/100/1000	10/100	10/100/1000, USB 2.0	USB 2.0 / FireWire	10/100/1000
Backup software	Windows Easy Backup	Automatic Backup Pro	N/A	EMC Retrospect HD	EMC Retrospect Express
RAID support	0, 1	N/A	N/A	0, 1, 5	N/A
USB print server	Yes	Yes	No	No	Yes
Mac support	No	Yes	Yes	Yes	No
					
	Supports more complex networks.	Foldershare enables easy online sharing.	Fast and easy.	Fast; RAID 5; good software.	Great backup software; open source.
	No RAID 5.	Slow slow slow!	Reformats USB disk drives.	No Ethernet.	No RAID.
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

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The **Best Overall** award is for products we believe are the best, regardless of price.

The **Best Value** award is for those which offer a good combination of features for a reasonable price.

APC reviewers contributing to the APC Best Buys guide: John Gillooly, Nick Race, Dan Chiappini, Matt Overington, Stephen Withers, Adam Turner and Anthony Caruana.

business desktops

Lenovo ThinkCentre M52

CONTACT Lenovo Australia PHONE 1300 557 073
ONLINE www.lenovo.com/au/en PRICE \$1,300



A state-of-the-art business PC with a host of system management and rescue and recovery utilities, an embedded security chip and integrated Gigabit Ethernet. Small form factor, a Pentium D 930 CPU, 1GB RAM and a 160GB hard disk. Price does not include monitor.

best overall

HP dx5150 SFF Desktop PC

CONTACT HP PHONE 1300 305 017
ONLINE www.hp.com.au PRICE \$960



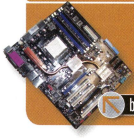
HP's dx5150 business desktop uses AMD's Athlon 64 X3000+ CPU on an ATI Radeon Xpress 200-based motherboard. The small form factor also packs a plain CD-ROM drive, 512MB of DDR400 RAM and an 80GB hard drive. Modest specs and a competitive price equal an excellent workhorse PC.

best value

motherboards / cpu

ASUS A8n32-SLI Deluxe

CONTACT ASUS PHONE 1300 278 788
ONLINE www.asus.com.au PRICE \$340



For power users, this is still the cream of the crop. With AMD's new AM2 socket only a few months away, this board marks the pinnacle of Socket 939 hardware. A huge feature set plus support for Athlon 64 chips and dual 16x SLI lanes — this board delivers on all fronts.

best overall

Gigabyte GA-K8N-SLI

CONTACT Synnex PHONE 1300 100 100
ONLINE www.synnex.com.au PRICE \$199



The GA-K8N-SLI brings Nvidia's dual-graphics chipset to a reasonably priced motherboard. Enough functionality for a high-performing Athlon 64-based PC and the SLI slots only just lack the bandwidth for ultra high-end cards. You'll need a floppy drive to install Windows.

best value

video cards

ATI Radeon X1900 XTX

CONTACT	ATI	PHONE	N/A
ONLINE	www.ati.com	PRICE	Approx \$950



Current performance king and pinnacle of ATI's product line, the X1900 XTX delivers. No faster than a normal X1900 XT when used in dual-card CrossFire setups, but hands down the fastest single card on the market today with all the latest features, eg. Shader Model 3.0 support.

best overall

Nvidia GeForce 7600 GT

CONTACT	Nvidia	PHONE	N/A
ONLINE	www.nvidia.com	PRICE	Approx \$375



Nvidia's recently released mainstream card, the GeForce 7600 GT raises the bar for price/performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.

best value

monitors

Dell 2405FPW

CONTACT	Dell	PHONE	1800 812 393
ONLINE	www.dell.com.au	PRICE	\$1,699



APC's labs team is still in love with Dell's 24in, 16ms screen. With a HD ready 1,920 x 1,200 native resolution, this screen is the perfect size for staring at, just filling one's field of view. Heaps of inputs, a great OSD and no ghosting. The finest possible way to view your PC.

best overall

optical drives

Sony DRU810A

CONTACT	Sony	PHONE	1300 138 246
ONLINE	www.sony.com.au	PRICE	\$119

Sony has led the pack in developing top-notch optical drives for years now. Here, double-layer support, a solid software suite and impressive write speeds (16x for DVD+R discs, 8x for DL discs and 48x for CD) round out the feature set. Better yet, it's backed up by a one-year warranty.



best overall

BenQ FP71G

CONTACT	BenQ	PHONE	(02) 9352 8800
ONLINE	www.benq.com.au	PRICE	\$350



Proof that good things can come in small packages, this 17in LCD screen manages to stay at a low price point while still delivering 8ms response time and D-Sub and DVI inputs. Basically packs in everything you need for painless computer usage at a reasonable price.

best value

Pioneer DVR-A11XLA

CONTACT	Pioneer Electronics	PHONE	1800 338 439
ONLINE	www.pioneeraudio.com.au	PRICE	\$99

Now on its 11th-generation release, this DVD burner is a steal at \$99. Industry-leading NERO 7 Essentials burning software is included and the drive itself offers a zippy 16x burn speed. The Pioneer drive is an excellent upgrade for an ageing system and a solid alternative to Sony's model.



best value

internal hard disks

Seagate Barracuda 7200.10 750GB

CONTACT	Seagate	PHONE	(02) 9891 0087
ONLINE	www.seagate.com	PRICE	\$980



It may not be on the shelves when this issue of APC hits the streets, but it won't be too far off. This 750GB whopper scored well in our benchmarks and — just think about it — you only need two of these for 1.5TB of storage! It's available in PATA and SATA, but who uses PATA these days?

best overall

Western Digital WD2500JS 250GB

CONTACT	Western Digital	PHONE	(03) 9541 8888
ONLINE	www.western.com.au	PRICE	\$169



Western Digital's drive delivers 250GB capacity, (the sweet spot in the market right now) but is more reasonably priced than the competition. It's got 8MB of cache, spins at 7,200RPM and has a 300MB/s SATA interface (not that any drive can saturate that at the moment).

best value

external hard disks

Maxtor OneTouch III Turbo Edition

CONTACT Maxtor PHONE (02) 9369 3662
ONLINE www.maxtor.com.au PRICE \$1,199 (1TB)



Power users looking to store files safely are advised to check out this external hard disk. The device offers FireWire 800, Firewire 400, USB 2.0 interfaces and up to 1TB of storage. RAID 0 and 1 arrays are supported and it ships with desktop backup software — no worries about trashed files.

best overall

Western Digital Passport Portable HD

CONTACT Western PHONE (03) 9541 8888
ONLINE www.western.com.au PRICE \$269 (80GB)



For those with more modest requirements, it's hard to go past the Passport line. Slim, compact and quick, it works via host power, so you don't generally need to lug a power adaptor. It doesn't ship with a case or software, but if you're just after a mobile repository, who cares?

best value

portable / usb

Sandisk Cruzer Micro

CONTACT Sandisk PHONE 1800 793 652
ONLINE www.sandisk.com PRICE \$72.89 (\$12MB)



USB memory keys are a part of modern computing. Be it transporting files, storing information or sharing photos, the humble USB key put the final nail in the floppy disk coffin. The Micro offers high transfer speeds in a tiny form factor (with a handy lanyard).

best overall

Corsair Flash Voyager

CONTACT Aitech PHONE (02) 8831 9999
ONLINE www.aitech.com.au PRICE \$55 (256MB)



Corsair's Flash Voyager is a compelling choice if you care more about storage capacity than diminutive size. It offers a USB 2.0 connection and ships with a 10-year warranty, which should prove ample for anyone looking to move files around between now and say, 2016?

best value

media / nas servers

Buffalo TeraStation Home Server 1.0TB

CONTACT Uniden PHONE (02) 9599 3355
ONLINE www.uniden.com.au PRICE \$1,799



To keep your media library online, you want lots of storage. The TeraStation offers a nominal terabyte (substantially less if configured as RAID 1 or 5), Gigabit Ethernet, support for DLNA media players, four USB ports for external drives (and/or a shared printer) and an FTP server for remote access.

best overall

Maxtor Shared Storage Plus

CONTACT Maxtor PHONE (02) 9369 3662
ONLINE www.maxtor.com.au PRICE \$399-\$699 (200GB-500GB)



Maxtor's Shared Storage Plus provides 200GB to 500GB of network storage, with the ability to stream media files to UPnP AV media adaptors — without the intervention of a PC. USB ports allow connection of printers and external disk drives for additional storage.

best value

smb servers

HP ML350 G4P

CONTACT HP PHONE 1300 305 017
ONLINE www.hp.com.au PRICE From \$2,295



HP are the current kings of SMB x86 servers. Their ML300 series server has been upgraded with the latest, supporting two 800MHz FSB Xeon, 12GB of RAM and up to six SATA, SCSI or SAS 3.5in drives. For setting up an exchange server and terminal services (and to keep your office ticking), you can't go wrong.

NEW ENTRY

best overall

Dell PowerEdge 1800

CONTACT Dell PHONE 1800 812 382
ONLINE www.dell.com.au PRICE \$1,897.50



For a basic system that will grow with your business, Dell's PowerEdge 1800 is a beauty. Though initial configuration is a single Xeon 3.0GHz with 512MB RAM and an 80GB SATA drive, you can upgrade it as your requirements grow. Redundant power and solid support come in at the ground floor.

NEW ENTRY

best value

notebooks multimedia

Dell XPS M1710

CONTACT Dell PHONE 1800 812 393
 ONLINE www.dell.com.au PRICE \$4,299



Gaming fiends, look no further. Dell has portable high-performance gaming sewn up with this dual-core beast. Packing a GeForce Go 7900 GTX graphics card, it's the ultimate way to get a few frags in on the train (or take it to a mate's place for an instant gaming challenge).

best overall

notebooks business

Lenovo ThinkPad R52

CONTACT Lenovo PHONE 1300 557 073
 ONLINE www.lenovo.com/au PRICE From \$1,850



Serious road warriors need look no further. Built to outlast even the most demanding treatment, the R52 is also packed with smart tech to save your business, including biometric fingerprint scanner, power-on and disk passwords (to keep that sensitive data safe).

best overall

Dell Inspiron 9400

CONTACT Dell PHONE 1800 812 393
 ONLINE www.dell.com.au PRICE From \$3,500



Dell has a great reputation for offering affordable PCs without skimping on the tech inside. The 9400 is about as good as it gets and gives you mobile performance and gaming (GeForce 7800). Couple this with 1,920 x 1,200 display res and a high-definition TV tuner. Nice.

best value

Dell Inspiron 1300

CONTACT Dell PHONE 1800 812 393
 ONLINE www.dell.com.au PRICE From \$998



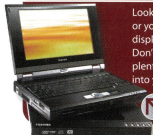
Whatever the size and nature of your business fleet, it's tough to go past Dell. While the business units don't have over-the-top specs, they're amply configured to deal with day-to-day work usage (and the bargain prices will only help sweeten the decision).

best value

notebooks ultraportable

Toshiba Libretto

CONTACT Toshiba PHONE 13 30 70
 ONLINE www.isd.toshiba.com.au PRICE From \$3,499

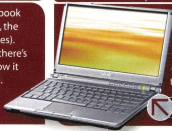


Look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).

best overall

Sony VGNTX27GPT

CONTACT Sony PHONE 1300 138 246
 ONLINE www.sony.com.au PRICE \$3,699



The bigger brother of the TX17GP, we were blown away by its crisp display, tiny form factor and battery life. Able to run over eight hours on a single charge (and with an optional extended battery, there's no need to worry if you forget your charger).

best value

handhelds / smartphones

iMate JasJar

CONTACT Carrier Devices PHONE 1300 727 789
 ONLINE www.clubimate.com PRICE \$1,699



iMate's JasJar gets as close as any device that we've ever seen to being all things to all people. Sure, it's on the chunky side — but it's part tablet, part PDA and part phone. It's connected in just about any way you can imagine and if you spring for an extra \$50 you get a nice docking station.

best overall

O2 XDA Atom

CONTACT BrightPoint PHONE 1300 300 213
 ONLINE www.saeo2.com PRICE \$1,229



O2's XDA Atom is small but packs plenty of punch. There were some early performance issues, but a recent ROM update fixed those. With Bluetooth, Wi-Fi, IR, Tri-band GSM and GPRS (and a bunch of office productivity apps), the Atom smartphone demonstrates that it's a great all-rounder.

best value

consumer printers

HP LaserJet 1020

CONTACT HP	PHONE 13 13 47
ONLINE www.hp.com.au	PRICE \$229

Households with serious printing requirements are well served with a laser printer. HP's base-model LaserJet is ideal. Boasting a print speed of 14 pages per minute, a USB 2.0 interface and a monthly duty cycle of 5,000 pages, this diminutive HP unit will keep up no matter how many assignments you throw at it.



NEW ENTRY

best overall

Epson Stylus Photo R230 Colour Printer

CONTACT Epson	PHONE 1300 361 054
ONLINE www.epson.com.au	PRICE \$199

Has brought superb photo quality (previously found only in more expensive photo printers) to a sub-\$200 price range. With six ink cartridges, the R230 produces border-free prints on paper ranging from 4 x 6 in to A4 (at up to 15ppm) and also prints directly to compatible CD/DVDs.



best value

smb printers

HP Officejet Pro K550

CONTACT HP	PHONE 1300 305 017
ONLINE www.hp.com.au	PRICE \$349

Total cost of ownership is the benchmark for business performance and the speedy K550 doesn't disappoint, with a USB interface and a 250-sheet tray, while four ink tanks minimise the time between cartridge changes. The 1,200dpi text output is remarkably quick and clear. An Ethernet port is provided on the K550dtn (for \$499).



best overall

Lexmark P915

CONTACT Lexmark	PHONE (02) 9930 3500
ONLINE www.lexmark.com.au	PRICE \$199

If the bottom line is all important and you've got modest requirements, Lexmark's P915 is an inexpensive printer offering reasonable output quality. The six-colour print engine also spits out acceptable photo prints, allowing it to serve a number of functions.



best value

multifunction consumer

Canon Pixma MP780

CONTACT Canon	PHONE 1800 021 167
ONLINE www.canon.com.au	PRICE \$549

Solid paper handling, quick scanning, PC and Mac support, and individual ink tanks complement outstanding print quality for a top-notch multifunction printer. It packs a PictBridge port and comes with standard fax support, but doesn't include an Ethernet port.



best overall

Lexmark X3350

CONTACT Lexmark	PHONE (02) 8401 3000
ONLINE www.lexmark.com.au	PRICE \$99

Anyone looking to occasionally print a school assignment, copy a form or scan a photo will find Lexmark's X3350 outstanding value for money. The grey unit even includes PictBridge support — but remember to keep an eye on consumable costs!



best value

multifunction smb

HP Colour LaserJet 2840 All-in-One Printer

CONTACT HP	PHONE 1300 305 017
ONLINE www.hp.com.au	PRICE \$1,699

Launched in the middle of last year, HP's Colour LaserJet 2840 All-in-One is the proven star for small business, providing exceptional quality colour printing at a price that's affordable for the sector. The only downside is slow print speed; 4ppm colour/19ppm black.



best overall

Brother MFC-9420CN

CONTACT Brother	PHONE (02) 9887 4344
ONLINE www.brother.com.au	PRICE \$1,599

\$100 cheaper than the HP Colour LaserJet 2840, but in many ways the new Brother is a better MFC, with faster print speeds (8ppm colour/31ppm black), built-in management and security features and high-capacity replacement toners. Cost savings = best value.



best value

Setup a Secure Wireless Network in Seconds!

(No experience required)



WRT54G
Wireless-G Broadband Router

**Just Push
the Button**

Want to setup a wireless network and turn on all the security features? Follow these simple instructions:

- STEP 1:** Push the button on the new Linksys router with SecureEasySetup™.
- STEP 2:** Click the button on your computer screen.
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adsl modems

Billion 7404VGP

CONTACT PC Range PHONE (08) 8322 9544
ONLINE www.billion.com.au PRICE \$299

It's hard to beat Billion's 7404VGP on features and price. For your \$299, you get one of the fastest ADSL2+ modems in terms of actual throughput (average over 1km and 3.5km phone line length), robust 802.11g wireless networking (supporting WPA2 security) and four Ethernet ports. There's built-in VoIP and PSTN passthrough (if the VoIP ever fails).



Billion 7300G

CONTACT PC Range PHONE (08) 8322 9544
ONLINE www.billion.com.au PRICE \$169

Despite its low price, the Billion 7300G managed to trump all the other modems in last month's ADSL2+ Labs Challenge on average speed across 1km and 3.5km line lengths. It includes four 10/100 ports as well as 802.11g (including WEP, WPA and WPA-2 security). The modem has configurable Quality of Service, too.



wireless routers

Linksys WRT54GP2

CONTACT Linksys PHONE 1800 678 808
ONLINE www.linksys.com.au PRICE \$249.95

VoIP is becoming a significant part of broadband usage, so it makes sense to buy a router that supports it. The WRT54GP2 hardware has a two-port VoIP ATA and a three-port Ethernet switch. The firmware includes an SPI firewall and offers above-average flexibility.



Linksys WRT54G

CONTACT Linksys PHONE 1800 678 808
ONLINE www.linksys.com.au PRICE \$139.95

A solid, well-regarded wireless router. Includes a four-port Ethernet switch and an SPI firewall, but leaves out the extras that aren't needed by everybody, such as VPN, VoIP and print server.

If you're on a tight budget, you might get better value from a modem/router combo.

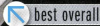


voip adaptors

NetComm V300

CONTACT NetComm PHONE (02) 9424 2070
ONLINE www.netcomm.com.au PRICE \$199.10

Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In APC's testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.



NetComm V100

CONTACT NetComm PHONE (02) 9424 2070
ONLINE www.netcomm.com.au PRICE \$128

Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more fiddling around, but we're attracted to the simplicity.



gps devices

TomTom Go500

CONTACT TomTom PHONE N/A
ONLINE www.tomtom.com PRICE \$1,099

Feature-rich and easy to use, the Go500 delivers a truckload of features that are so well put together you're scarcely aware of them all, plus, the Go500 acts as a wireless Bluetooth speakerphone for your mobile. Route calculation is fast and easy to use. Brilliant.



StreetPilot c320

CONTACT GME Electrophone PHONE (02) 9844 6666
ONLINE www.gme.net.au PRICE \$899

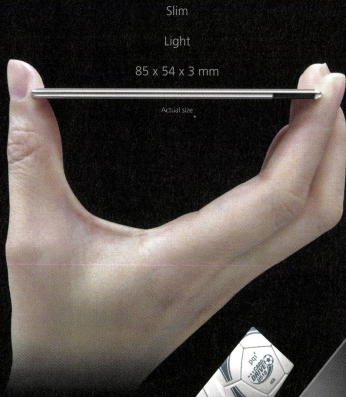
It just works — when you can say that about a complex piece of hardware you know you're on a winner. StreetPilot's c320 tells you how to get from A to B simply. It's not as feature-rich as other GPS receivers but what it does it does well. For GPS on a budget, this is it.



Your Way, Your Style.

pqi®

The card is just not a card!



Slim

Light

85 x 54 x 3 mm

Actual Size

Card Drive U510

The latest PQI portable storage device is available with a whopping 16GB capacity and measures only 3mm thin. Image a credit card size device that requires no external power to function and stores any type of data you put to it. Sporting all the functions of a USB (2.0/1.1) compatible device, functionable on Windows or Mac OS, it definitely packs more value into your wallet.



Soccer Ball



Iron Gray



Metallic Silver



Built-in retractable design



USB2.0 Compatible



3mm Thin



Card Drive U310

Card Drive U330

Card Drive U339 Pro

Card Drive U339S

Card Drive U339S

Card Drive U339

Traveling Disk U230

Smart Genie U728

POWER QUOTIENT INTERNATIONAL CO., LTD.

Address : 14F, No. 16, Jian Ba Road, Chung Ho City, Taipei, Taiwan
Tel : +886-2-62265288 Fax : +886-2-62265268
Web : www.pqi.com.tw E-mail : sales@pqi.com.tw

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JPM TECHNOLOGY PTY LTD

Address: Suit 1004, 275 Alfred Street, North Sydney, Australia.
Tel : 61-2-9922-1686 Fax : 61-2-9922-1636
E-mail : jlu@goldenleaf.com.au

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digital cameras

Canon EOS-1Ds Mark II

CONTACT Canon PHONE 13 13 83
ONLINE www.canon.com.au PRICE \$12,999



When it comes to superb image-quality photography, it's hard to go past Canon. If Canon keeps bringing out models even half as good as the 1Ds, then 35mm has truly had its day. If you're looking to drop some serious cash for seriously good images, look no further.

best overall

Olympus Tough 720SW

CONTACT Olympus PHONE 1300 659 678
ONLINE www.olympus.com.au PRICE \$599



Olympus now has the camera to do it all, featuring a housing that can survive up to 3m underwater — and the spills of falling out of pockets. At 7.1 megapixels and with a 3x optical zoom, you don't have any excuse for not getting down and dirty where the photos are.

best value

digital video cameras

Canon XL H1

CONTACT Canon PHONE (02) 9805 2000
ONLINE www.canon.com.au PRICE \$13,999



The biggest, baddest camera on the HD scene. It might break the bank, but definitely provides unparalleled images. 1080i HD on 3CCDs. Image controls to get excellent film-like results. XLR audio. Interchangeable lenses. Essentially, a thing of beauty.

best overall

Panasonic NV-GS300

CONTACT Panasonic PHONE 13 26 00
ONLINE www.panasonic.com.au PRICE \$159



This is a close-fought category, but the GS300 sets itself apart by delivering 3CCD at an amazing price. With optical stabilisation, 10x zoom and Leica lensing, this is a great little unit. No built-in effects, but who has ever used them and not regretted it later?

best value

projectors

BenQ PE7700

CONTACT BenQ PHONE (02) 9352 8800
ONLINE www.benq.com.au PRICE \$4,999



The PE7700 offers excellent picture clarity and tone, a wide-screen native resolution of 1,280 x 768 pixels and a 3,000-hour lamp life. Support for progressive scan mode, dual-composite and HDMI inputs and a backlit remote control make this BenQ unit hard to beat.

best overall

Toshiba S8 DLP

CONTACT Toshiba PHONE (02) 9887 6000
ONLINE www.toshiba.com.au PRICE \$1,999



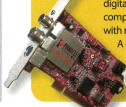
If you're after a basic projector to handle some gaming, movies and web surfing, the S8 is a safe bet. 800 x 600 pixel resolution, 2,000:1 contrast ratio, and composite, S-Video and VGA inputs. Better still, the 10,000-hour lamp life means you won't have to buy pricey bulbs every few months.

best value

tv tuners

Pinnacle PCTV 310i

CONTACT Lako Pacific PHONE (03) 9455 7444
ONLINE www.lakopacific.com PRICE \$199.99



What's not to like about the 310i? With analogue and digital TV tuners (plus FM radio) on one card, it's the complete package. The software delivers PVR features with recording to DivX or MPEG-2 files, or direct to DVD. A remote control is included; there's even an S-Video/composite input to digitise analogue home videos.

best overall

Leadtek WinFast TV2000 XP Expert

CONTACT Compucon (and others) PHONE (02) 9496 5888
ONLINE www.compucon.com.au PRICE \$95



A very affordable analogue TV and FM radio card. The setup might not be the easiest or the supporting software the slickest on the market, but it provides plenty of features — including a remote control — for your money and can deliver good results. PVR functions include time-slip.


best value

media adaptors

Zensonic Z500 HD Network DVD player

CONTACT Zensonic PHONE (08) 8322 9544
 ONLINE www.zensonic.com.au PRICE \$569

If you want to get your digital media from the study to the lounge room, the Z500 can handle anything you throw at it. It's a progressive-scan MPEG4/DVD player with HDCP-compatible HDMI, plus built-in Ethernet and 802.11b/g for streaming internet access and playing music, photos and movies from any PC on your home network.



best overall

Zensonic Z340 DVD/MPEG4 player

CONTACT Zensonic PHONE (08) 8322 9544
 ONLINE www.zensonic.com.au PRICE \$169

Practically anything you can burn to disc or copy to a memory card — whether it's music, photos or movies — the Zensonic Z340 DVD/MPEG4 player can play. A region-free progressive-scan DVD player, will convert NTSC DVDs to PAL on the fly (and vice versa). It also sports VGA and component video outputs, along with built-in surround sound decoding.



best value

HD LCD televisions

Loewe Xelos A 37 DVB-TC

CONTACT International Dynamics PHONE (03) 9429 0822
 ONLINE internationaldynamics.com.au PRICE \$6,499

Big LCD TVs are ready for prime time, but it's hard to find them with built-in digital tuners. The Xelos A 37 DVB-TC provides 94cm of widescreen goodness and, for an extra \$1,000, comes with a dual SD tuner and built-in 80GB hard drive recorder.



best overall

Panasonic TX-27LWD500A

CONTACT Panasonic PHONE 13 26 00
 ONLINE www.panasonic.com.au PRICE \$2,799

Built-in analogue/SD/HD tuners help the Panasonic TX-27LWD500A stand out as an excellent starting point for getting HD action into your lounge room. Along with a 68cm wide-screen and HDCP-compatible HDMI input, it's also got a 6-in-1 memory card reader.




best value

personal video recorders

Topfield TF5000PVRT Masterpiece

CONTACT Topfield PHONE 1300 889 803
 ONLINE www.topfield.com.au PRICE \$1,199

If you're ready to revolutionise your TV viewing, this'll let you skip ads, pause live TV and record two programs at once. It sports twin SD digital tuners and a 160GB hard drive, plus the Ice TV Electronic Program Guide lets you "set and forget" the Masterpiece and never miss your favourite show again.



best overall

Legend Digital LPVR080

CONTACT Legend Digital PHONE (02) 8223 9656
 ONLINE www.legenddigital.com PRICE \$600

The Legend Digital LPVR080 also sports twin standard-definition digital tuners along with an 80GB hard drive (up to 400GB is available). Along with PVR features like pausing live TV and ICE TV-compatibility, it lets you copy across MP3 and JPEG files from your computer via USB so you can play them on your TV and stereo.




best value

handheld media players

Archos AV500 Digital Video Recorder

CONTACT World Tech PHONE (03) 9310 3497
 ONLINE www.worldtech.com.au PRICE \$945 (30GB)

Forget about dinky mobile phones and MP3 players touting fuzzy video clips — the AV500 sports a beautiful 10.2cm screen. Up to 100GB of storage puts your entire movie collection in your pocket, and you can record from external video sources.



best overall

Zvue 200A

CONTACT World Tech PHONE (03) 9310 3497
 ONLINE www.worldtech.com.au PRICE \$189

The Zvue 200A is a video player stripped to the bare essentials — no built-in speaker, rechargeable battery or hard drive — but the 2.5in full colour display is surprisingly watchable. If you're after a dirt-cheap player, that has low screen resolution (but isn't a piece of junk), you'll be pleasantly surprised.



best value

Up to **93 times faster than 256k broadband**

ADSL2+

UP TO **24Mbps**

**\$0 BROADBAND
SETUP**
WITH 18 MONTH CONTRACT

\$29.99[^]
MONTHLY
From INC. GST

Plan	XLite	Lite	Medium	Heavy	Premium	Premium Plus
Monthly Download Quota	600MB#	6GB*	18GB*	30GB*	50GB*	100GB*
Shaping	64k/64k	128k/128k	128k/128k	128k/128k	256k/256k	256k/256k
Monthly Charge	\$29.99	\$39.99	\$49.99	\$59.99	\$89.99	\$129.99

#600MB free, then 15c/MB, max download charge \$30. Speed shaped once 10GB is reached. *Speed shaped when monthly download quota is reached. ^Total minimum cost over 18 month contract term for Xlite plan is \$539.82 (includes \$0 setup but excludes modem cost). Download speed of ADSL2+ is up to 24Mbps and upload speed is up to 1Mbps. Prices subject to change without prior notice. Full terms and conditions apply. Check TPG website at www.tpg.com.au for details and availability. TPG Internet Pty Ltd ABN 15 068 383 737



www.tpg.com.au
1300 360 855

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- ▶ **NO Contention (100% dedicated to your traffic)**
- ▶ **NO traffic charges and NO speed shaping/throttling**
- ▶ **2Mbps/2Mbps and 4Mbps/4Mbps speeds also available**

Available in Sydney Melbourne Brisbane Adelaide Perth Canberra

+ Prices include GST but exclude installation.

Call TPG on 1300 659 412 or email corpnet@tpg.com.au for more details.

\$218.90⁺
PER SITE
MONTHLY
INC. GST

Dealers welcome



ADSL2+ providers sprouting everywhere

Many ISPs have had it with Telstra's maximum 1.5Mbit/s ADSL speed, reports *Dan Warne*.

Optus' announcement that it will wholesale its new \$150 million ADSL2+ network to other ISPs has sparked a trend, with more ISPs tiring of Telstra's handicapped 1.5Mbit/s maximum ADSL speeds. They are either buying access to someone else's ADSL2+ network or building their own where they have high customer density.

People Telecom is the latest to announce it has switched on its ADSL2+ services in some Melbourne suburbs, using NEC's NEXTEP DSL network. Soul Telecom and its subsidiary B Digital have announced they will sell ADSL2+ via Optus' ADSL2+ network.

Cut-price ISP Exetel says it will offer ADSL2+ soon, but won't comment on whose ADSL2+ infrastructure it will be reselling, while bargain-priced ISP TPG has been rolling out its own ADSL2+ network and is expected to start



offering services within months. Regional Internet Australia has installed its own DSLAMs into a number of exchanges in Queensland.

Meanwhile, West Australian ISP Westnet has dumped Telstra as its primary wholesale bandwidth provider, taking its business to Optus. It says it aims to offer ADSL2+ services towards the end of 2006.

Other ISPs are expected to shift their business *en masse* to Optus

ADSL2+ on a wholesale level. That will be a relief for Optus, which is under fire for lower than expected subscriber growth and financial performance. Optus says it has 550,000 OptusNet broadband customers, while Telstra has over 1 million BigPond Broadband customers.

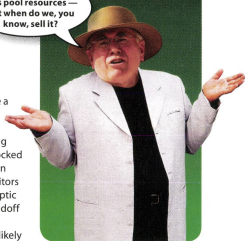
However, Telstra may have a tough fight ahead to keep customers tied to BigPond: it seems no closer to announcing ADSL2+ services, as it is still stuck in battles with the competition regulator over giving competitors access to its proposed fibre-optic broadband network. The standoff has become so serious that financial analysts believe it is likely to delay the Government's third and final sale of the rest of Telstra to private shareholders.

in brief

FIBRE-OPTIC BID

A number of large and small telcos have proposed to the Government that a jointly funded fibre broadband network be built. This would be to combat Telstra's desire to build a fibre-to-the-node broadband network — for Telstra use only — by proposing that the telcos come together to fund the building of the infrastructure.

Hey guys, sure, let's pool resources — but when do we, you know, sell it?



your monthly broadband guide

APC is proud to partner with the Independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL2+ and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kbit/s and 10GB data.

High speed: cheapest 1.5Mbit/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 4 May 2006.

iBURST GOES WEST

Wireless broadband provider iBurst has announced it is expanding to Adelaide and Perth later this year. It said it didn't want to commit to an exact date, saying that securing tower sites can be a moving feast. It has so far spent about \$30 million on building its existing network in Melbourne, Sydney, Brisbane, the Gold Coast and Canberra.

PERTH
ADELAIDE



Name	Phone	Online	Budget plan (under \$35)	Light plan (under \$60, at least 1.5Mbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 1.5Mbit/s, minimum 1GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 1GB data limit)	National	Span (Mbit/s)	Setup fee & contract length	Rapid transfer
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Superfast broadband ISPs (faster than 1.5Mbit/s)

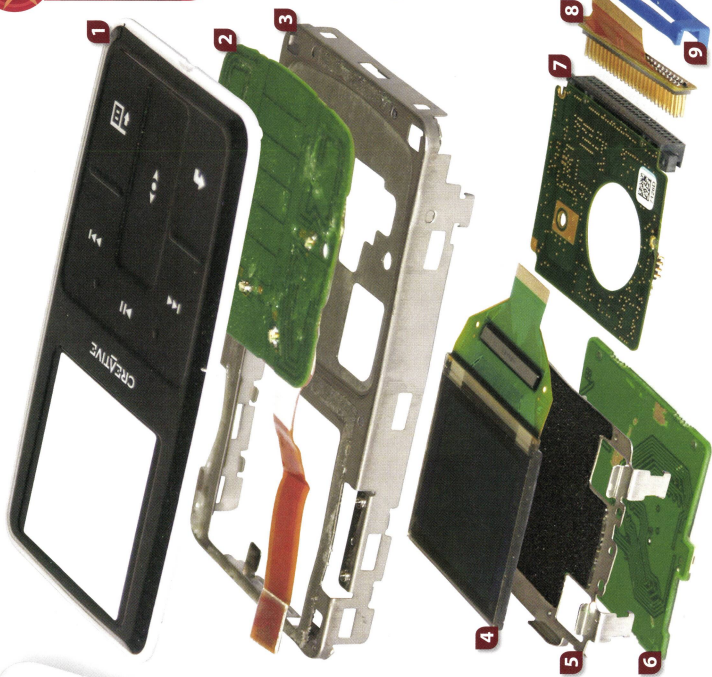
li.net broadband2+ ADSL (24Mbit/s)	13 19 17	www.li.net.au	\$29.95 600MB 24Mbit/s	\$39.95 100MB 24Mbit/s	\$69.95 200MB 24Mbit/s	\$49.95 100MB 24Mbit/s	✓	✓	\$119 6mths	✓
Intermode Extreme ADSL2+	13 66 33	www.intermode.com.net	N/A	\$29.95 100MB 24Mbit/s	\$49.95 200MB 24Mbit/s	\$59.95 200MB 24Mbit/s	✓	✓	\$129 6mths	✓
Primes up to 8000kpbs	1300 554 848	www.primes.com.au	\$29.95 100MB 8000kpbs	\$39.95 100MB 8000kpbs	\$69.95 200MB 8000kpbs	\$49.95 100MB 8000kpbs	✓	\$2	\$119 12mths	✓
OptusNet Cable	1800 504 504	http://broadbanddeals.optusnet.com.au	\$29.95 300MB+ 10Mbit/s	\$39.95 700MB+ 10Mbit/s	\$69.95 200MB+ 10Mbit/s	\$49.95 200MB+ 10Mbit/s	✓	✓	\$39 12mths	✓
OptusNet DSL Direct	1800 504 504	http://broadbanddeals.optusnet.com.au	\$29.95 300MB+ 10Mbit/s	\$39.95 700MB+ 10Mbit/s	\$69.95 200MB+ 10Mbit/s	\$49.95 200MB+ 10Mbit/s	✓	✓	\$89 12mths	✓
OzEmail broadband2+ 24Mbit/s	13 35 93	www.ozemail.com.au	\$29.95 600MB 24Mbit/s	\$39.95 400MB 24Mbit/s	\$69.95 200MB 24Mbit/s	\$49.95 100MB 24Mbit/s	✓	✓	\$119 6mths	✓
People Telecom ADSL2+	1300 795 633	www.peopletelecom.com.au	N/A	\$29.95 200MB+ 8Mbit/s	\$49.95 100MB 24Mbit/s	\$59.95 100MB+ 24Mbit/s	✓	✓	\$99 12mths	✓
Telstra BigPond Cable	13 12 82	www.bigpond.com	\$29.95 200MB+ 8Mbit/s	\$39.95 100MB+ 8Mbit/s	\$59.95 100MB+ 8Mbit/s	\$49.95 100MB+ 8Mbit/s	✓	\$2.50	\$259 12mths	✓
TPG Residential ADSL2+	1300 360 855	www.tpg.com.au	\$29.95 600MB 24Mbit/s	\$39.95 600MB 24Mbit/s	\$59.95 300MB 24Mbit/s	\$49.95 180MB 24Mbit/s	✓	✓	\$99.95 12mths	✓

Regular broadband ISPs (1.5Mbit/s or less)

AAPT ADSL	13 88 88	www.aapt.com.au	\$29.95 500MB 256Kbit/s	\$39.95 120MB 512Kbit/s	\$59.95 150MB 1.5Mbit/s	\$59.95 150MB 1.5Mbit/s	✓	✓	\$0 1mth	✓	
Aardark Internet	1800 227 382	www.aardark.net	\$29.95 200MB 256Kbit/s	\$49.95 150MB 512Kbit/s	\$79.95 300MB 1.5Mbit/s	\$49.95 150MB 512Kbit/s	✓	✓	\$130 6mths	✓	
Alphalink	1300 360 638	http://home.alphalink.com.au	\$29.95 700MB 256Kbit/s	\$44.95 100MB 512Kbit/s	\$69.95 100MB 512Kbit/s	\$99.95 100MB 1.5Mbit/s	✓	✓	\$121 1mth	✓	
Ausli Broadband	1300 785 742	www.ausli.com.au	\$14.95 150MB 256Kbit/s	\$44.95 250MB 512Kbit/s	\$69.95 250MB 512Kbit/s	\$1.9Mbit/s 1.5Mbit/s	✓	✓	\$55 1mth	✓	
Australis Internet ADSL	1800 288 871	www.australis.net	N/A	\$29.95 100MB 512Kbit/s	\$44.95 250MB 512Kbit/s	\$69.95 350MB 1.5Mbit/s	✓	✓	\$169 1mth	✓	
Australis Internet Broadband ADSL / Phone	1800 288 871	www.australis.net	\$29.95 160MB 256Kbit/s	\$44.95 250MB 512Kbit/s	\$69.95 350MB 1.5Mbit/s	\$69.95 350MB 1.5Mbit/s	✓	✓	\$169 1mth	✓	
Autoc ISP Home Broadband	1300 788 513	www.autoc.aunz.com	N/A	\$29.95 200MB 512Kbit/s	\$44.95 250MB 512Kbit/s	\$69.95 350MB 1.5Mbit/s	✓	✓	\$129 12mths	✓	
BIT.net	1300 248 638	www.bit.net	\$29.95 200MB 512Kbit/s	\$39.95 200MB 512Kbit/s	\$59.95 100MB 1.5Mbit/s	\$39.95 100MB 1.5Mbit/s	✓	✓	\$132 6mths	✓	
B&B Internet Residential ADSL	1800 252 638	www.bbb.net.au	N/A	\$29.95 200MB 512Kbit/s	\$44.95 250MB 512Kbit/s	\$69.95 350MB 1.5Mbit/s	✓	✓	\$139 6mths	✓	
BlackStamp ADSL	1800 690 600	www.blackstamp.net.au	\$19.95 200MB 256Kbit/s	\$29.95 500MB 512Kbit/s	\$49.95 No limit 1.5Mbit/s	\$64.95 100MB 1.5Mbit/s	✓	✓	\$108 6mths	✓	
BBI Flat Rate DSL	1300 785 956	www.browbeat.net.au	\$29.95 200MB 256Kbit/s	\$39.95 200MB 512Kbit/s	\$59.95 100MB 1.5Mbit/s	\$39.95 100MB 1.5Mbit/s	✓	✓	\$119 6mths	✓	
BBI Excess DSL	1300 785 956	www.browbeat.net.au	\$29.95 200MB 256Kbit/s	\$39.95 200MB 512Kbit/s	\$59.95 100MB 1.5Mbit/s	\$39.95 100MB 1.5Mbit/s	✓	✓	\$119 6mths	✓	
Brown Bear DSL / Phone	1300 785 956	www.browbeat.net.au	\$29.95 200MB 256Kbit/s	\$39.95 200MB 512Kbit/s	\$59.95 100MB 1.5Mbit/s	\$39.95 100MB 1.5Mbit/s	✓	✓	\$119 6mths	✓	
CEInternet Broadband	1800 222 256	www.ceinternet.com.au	\$29.95 200MB 256Kbit/s	N/A	\$79.95 100MB 512Kbit/s	\$99.95 100MB 1.5Mbit/s	✓	\$2.50	\$99 1mth	✓	
Cheshtak by Ozisweb	1300 727 374	www.cheshtak.net.au	\$29.95 200MB 256Kbit/s	N/A	\$79.95 100MB 512Kbit/s	\$99.95 100MB 1.5Mbit/s	✓	✓	\$129 6mths	✓	
Comcast Internet	1300 300 324	www.comcast.com.au	\$19.95 200MB 256Kbit/s	\$39.95 100MB 512Kbit/s	\$79.95 No limit 1.5Mbit/s	\$69.95 150MB 1.5Mbit/s	✓	✓	\$99 6mths	✓	
ComesOn Aussie Home ADSL	1300 361 317	www.comesonaussie.net	\$34.95 100MB 256Kbit/s	\$44.95 200MB 512Kbit/s	\$74.95 350MB 1.5Mbit/s	\$74.95 350MB 1.5Mbit/s	✓	✓	\$179 1mth	✓	
ComesOn Aussie Business ADSL	1300 361 317	www.comesonaussie.net	N/A	\$29.95 200MB 512Kbit/s	\$44.95 200MB 512Kbit/s	\$74.95 350MB 1.5Mbit/s	✓	✓	\$179 6mths	✓	
Concept Networks	1300 132 331	www.conceptual.net.au	\$29.95 250MB 256Kbit/s	\$49.95 250MB 512Kbit/s	\$79.95 No limit 1.5Mbit/s	N/A	✓	✓	\$99 6mths	✓	
Comenous Home ADSL	1300 133 888	www.comenous.net.au	\$27.95 200MB+ 256Kbit/s	\$59.95 100MB+ 512Kbit/s	\$59.95 100MB+ 512Kbit/s	N/A	✓	✓	\$149 6mths	✗	
Crazy Broadband	1300 248 638	www.crazy.com.au	\$29.95 200MB 256Kbit/s	\$44.95 200MB 512Kbit/s	\$69.95 200MB 1.5Mbit/s	\$49.95 200MB 1.5Mbit/s	✓	✓	\$140 6mths	✓	
Crul DSL	1300 136 908	http://www.crul.com.au	\$29.95 150MB 512Kbit/s	\$39.95 250MB 512Kbit/s	\$64.95 350MB 1.5Mbit/s	\$64.95 350MB 1.5Mbit/s	✓	✓	\$99 6mths	✓	
Cybernet ADSL	1300 133 599	www.cybernetinternet.com	\$29.95 100MB 256Kbit/s	\$39.95 100MB 512Kbit/s	\$79.95 350MB 1.5Mbit/s	\$79.95 350MB 1.5Mbit/s	✓	✓	\$5.50	\$49 12mths	✓
CyberNet ADSL	1300 720 062	www.cyberone.com.au	\$15.95 500MB 256Kbit/s	\$54.95 No limit 512Kbit/s	\$54.95 No limit 512Kbit/s	\$84.95 No limit 1.5Mbit/s	✓	✓	\$0 1mth	✓	
DCSI	1300 665 575	www.dcsi.net.au	\$29.95 500MB 256Kbit/s	\$49.95 100MB 512Kbit/s	\$59.95 200MB 1.5Mbit/s	\$79.95 200MB 1.5Mbit/s	✓	✓	\$125 6mths	✓	
Dodo	13 16 02	www.dodo.com.au	\$19.95 250MB+ 256Kbit/s	\$34.95 100MB+ 512Kbit/s	\$64.95 No limit 1.5Mbit/s	\$64.95 300MB+ 1.5Mbit/s	✓	✓	\$1.90	\$119 1mth	✓
E-SOUL	1300 367 258	www.esoul.net.au	N/A	\$29.95 200MB 256Kbit/s	\$44.95 200MB 512Kbit/s	\$69.95 200MB 1.5Mbit/s	✓	✓	\$129 6mths	✓	
ETel ADSL	1300 550 550	http://www.etal.net.au	\$29.95 400MB+ 256Kbit/s	\$49.95 No limit 512Kbit/s	\$49.95 No limit 512Kbit/s	\$79.95 400MB 1.5Mbit/s	✓	✓	\$4	\$125 1mth	✓
Empcom ADSL Service	1300 731 368	www.empcom.net	\$25 100MB 256Kbit/s	\$35 100MB 512Kbit/s	\$65 No limit 1.5Mbit/s	\$75 100MB 1.5Mbit/s	✓	✓	\$129 6mths	✓	
Encom Home ADSL	1300 739 455	www.encom.com.au	\$29.95 200MB 256Kbit/s	N/A	\$69.95 100MB 512Kbit/s	\$89.95 100MB 1.5Mbit/s	✓	✗	\$129 6mths	✓	
FutureWeb Pty Ltd	1300 361 355	www.futureweb.com.au	\$31.95 200MB 256Kbit/s	\$49.95 150MB 512Kbit/s	\$79.95 150MB 1.5Mbit/s	N/A	✓	✓	\$129 6mths	✓	
Gday.net ADSL Broadband	1300 668 640	http://www.telecom.gday.net	\$24.95 300MB+ 256Kbit/s	N/A	\$69.95 100MB+ 512Kbit/s	\$99.95 100MB 1.5Mbit/s	✓	✗	\$129 1mth	✓	
Global Dial ZapDSL	1300 170 710	www.globaldial.com	\$29.95 300MB 256Kbit/s	\$49.95 200MB 512Kbit/s	\$79.95 No limit 1.5Mbit/s	\$89.95 140MB 1.5Mbit/s	✓	✓	\$99 6mths	✓	
Glocom Broadband ADSL	1300 728 392	www.glocom.net.au	\$32.95 200MB 256Kbit/s	\$44.95 200MB 512Kbit/s	\$74.95 250MB 1.5Mbit/s	\$74.95 250MB 1.5Mbit/s	✓	✓	\$179 1mth	✓	
Goldlink ADSL	1300 654 024	www.goldlink.com.au	N/A	\$49.95 250MB 512Kbit/s	\$74.95 350MB 1.5Mbit/s	\$74.95 350MB 1.5Mbit/s	✓	✓	\$99 6mths	✓	
Go2Web ADSL	1300 366 065	www.go2web.com.au	\$29.95 200MB 256Kbit/s	\$59.95 100MB 512Kbit/s	\$89.95 100MB 1.5Mbit/s	\$79.95 100MB 1.5Mbit/s	✓	✓	\$139 1mth	✓	
Handy Communications RG ADSL	1300 360 131	www.handy.com.au	\$29.95 200MB 256Kbit/s	\$44.95 200MB 512Kbit/s	\$74.95 250MB 1.5Mbit/s	\$74.95 250MB 1.5Mbit/s	✓	✓	\$139.95 1mth	✓	
Hydra ADSL	1300 132 014	www.hydra.com.au	N/A	\$49.95 250MB 512Kbit/s	\$74.95 250MB 1.5Mbit/s	\$74.95 250MB 1.5Mbit/s	✓	✓	\$129 6mths	✓	
li.net broadband ADSL	13 19 17	www.li.net.net.au	\$29.95 600MB 24Mbit/s	\$39.95 400MB 24Mbit/s	\$69.95 200MB 24Mbit/s	\$49.95 100MB 24Mbit/s	✓	✓	\$119 6mths	✓	
Infinity Plus Residential DSL	1300 726 340	www.infinityplus.net.au	N/A	\$29.95 200MB 512Kbit/s	\$49.95 200MB 512Kbit/s	\$79.95 200MB 1.5Mbit/s	✓	✓	\$100 6mths	✓	

Name	Phone	Online	Budget plan (under \$35)	Light plan (under \$40, at least 512Kbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kbit/s, minimum 3GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 10GB data limit)	National	Spam filtering	Safety fee & contract length	Rapid transfer
Regular broadband ISPs (1.5Mbit/s or less)										
Instant Communications ADSL	1300 139 369	www.in.com.au	\$30* 200MB 256Kbit/s	\$52 568 512Kbit/s	\$73* 200B 512Kbit/s	\$87* 10GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
IntegrityNet ADSL	1300 684 337	www.integritynet.com.au	\$29.95* 200MB 256Kbit/s	\$50.95* 568 512Kbit/s	\$69.95* 10GB 512Kbit/s	\$99.95* 10GB 1.5Mbit/s	✓	✓	\$139 12mths	✓
Interne Home ADSL	13 66 33	www.interne.net	\$29.95 200MB 256Kbit/s	\$39.95 868 512Kbit/s	\$69.95 4GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
Interne SOHO ADSL	13 66 33	www.interne.net	N/A	\$59.95 10GB 512Kbit/s	\$129.95 20GB 512Kbit/s	\$199.95 10GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
iPrimus Flexible Broadband	1300 854 848	www.iprimus.com.au	\$19.95 500MB 256Kbit/s	\$29.95 1GB 512Kbit/s	\$69.95 2GB 512Kbit/s	\$99.95 12GB 1.5Mbit/s	✓	\$2	\$119 12mths	✗
iSage Internet ADSL	1300 725 789	www.isage.aust.net	\$29.95 15GB 256Kbit/s	\$39.95 25GB 512Kbit/s	\$69.95 35GB 1.5Mbit/s	\$99.95 35GB 1.5Mbit/s	✓	✓	\$119 1mth	✓
iSpace ADSL	1300 769 615	www.ispace.net.au	\$29.95* 200MB 256Kbit/s	\$49.95 568 512Kbit/s	\$79.95 10GB 512Kbit/s	\$99.95 15GB 1.5Mbit/s	✓	✓	\$120 6mths	✓
Jumbi Broadband	1300 855 554	www.jumbi.com.au	N/A	\$45.95* 20GB 512Kbit/s	\$55.95* 35GB 512Kbit/s	\$65.95* 20GB 1.5Mbit/s	✓	✓	\$139 6mths	✓
Let's Go ADSL	1300 556 114	www.lets.go.com.au	N/A	\$59.95 30GB 512Kbit/s	\$59.95 30GB 512Kbit/s	\$99.95 30GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
Luckily Communications ADSL	1300 768 146	www.luckily.net.au	N/A	\$59.95 25GB 512Kbit/s	\$79.95 25GB 1.5Mbit/s	\$173.95 35GB 1.5Mbit/s	✓	✓	\$120 1mth	✓
Mallika Internet DSL	1300 665 865	www.mallika.net.au	\$29.95* 200MB 256Kbit/s	\$49.95* 1GB 512Kbit/s	\$59.95 10GB 512Kbit/s	\$89.95 10GB 1.5Mbit/s	✓	✓	\$110 1mth	✓
Midcoast Internet	1300 134 638	www.midcoast.com.au	\$28.50* 200MB* 256Kbit/s	N/A	\$71.50 10GB* 512Kbit/s	\$98* 10GB* 1.5Mbit/s	✓	✓	\$130 6mths	✓
Mydcor.com.au	1300 736 783	www.mydcor.com.au	\$34.95 300MB 256Kbit/s	\$44.95 1.5GB 512Kbit/s	\$79.95 30GB 512Kbit/s	\$99.95 15GB 1.5Mbit/s	✓	✓	\$110 6mths	✓
NCD ADSL	1300 768 433	www.ncd.net.au	\$29.99* 1GB 256Kbit/s	\$39.99* 2GB 512Kbit/s	\$14.95 35GB 512Kbit/s	\$69.95 15GB 1.5Mbit/s	✓	✗	\$125 6mths	✓
Neighbourhood Cable	1300 966 248	www.ncable.net.au	\$27.95* 200MB 256Kbit/s	N/A	\$69.95 10GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	✓	\$99 12mths	✓
Netbay Xtreme DSL	1300 733 215	www.netbay.com.au	\$29.95* 200MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$49.95* 10GB 512Kbit/s	\$69.95* 10GB 1.5Mbit/s	✓	✓	\$99 12mths	✓
Netspace Home ADSL	13 14 56	www.netspace.net.au	\$29.95* 300MB 256Kbit/s	\$39.95 1GB* 512Kbit/s	\$59.95 25GB* 512Kbit/s	\$79.95 20GB* 1.5Mbit/s	✓	✓	\$99 6mths	✓
Netspace SOHO ADSL	13 14 56	www.netspace.net.au	N/A	\$59.95 15GB 512Kbit/s	\$59.95 15GB 512Kbit/s	\$99.95 15GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
North Queensland Telcocon ADSL	1300 664 178	www.aqtelcon.com.au	N/A	\$512Kbit/s	\$512Kbit/s	\$89.95 35GB 1.5Mbit/s	✓	✓	\$90 1mth	✓
Optraweb.com.au/VOIP	1300 730 720	www.optraweb.com.au	N/A	\$491 10GB 512Kbit/s	\$551 30GB 512Kbit/s	\$681 10GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
QEmail Broadband	13 35 93	www.qemail.com.au	\$29.95 600MB 512Kbit/s	\$39.95 4GB* 512Kbit/s	\$69.95 20GB* 1.5Mbit/s	\$99.95 10GB* 1.5Mbit/s	✓	✓	\$119 6mths	✓
Qforcon Residential ADSL	1300 134 081	www.qforcon.com	\$24.95* 200MB 256Kbit/s	N/A	\$65.95 No limit 512Kbit/s	\$89.95 No limit 1.5Mbit/s	✓	✓	\$119 6mths	✓
QoSP ADSL	1300 654 653	www.qosp.com.au	N/A	\$48.40 1.5GB 512Kbit/s	\$79.75 30GB 512Kbit/s	\$93.50 15GB 1.5Mbit/s	✓	\$2.75	\$132 6mths	✓
Qzshred ADSL	1300 769 615	www.qzshred.net.au	\$29.95* 200MB 256Kbit/s	\$59.95* 2GB 512Kbit/s	\$79.95* 20GB 512Kbit/s	N/A	✓	✓	\$120 6mths	✓
Pacific Internet DSL	13 36 35	www.pacific.net.au	\$29.95* 200MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$59.95 No limit 512Kbit/s	\$89.95 No limit 1.5Mbit/s	✓	✓	\$99 6mths	✓
Quikmark Online	1300 138 558	www.quikmarkonline.com.au	N/A	\$53.50 5GB 512Kbit/s	\$69.95 15GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	✗	\$129 6mths	✓
Quik Internet ADSL	1800 000 355	www.qi-quick.com.au	\$29.99* 200MB 256Kbit/s	\$34.99 5GB 512Kbit/s	\$74.99 No limit 512Kbit/s	\$99.99 10GB 1.5Mbit/s	✓	✓	\$120 6mths	✓
Rabbit Internet ADSL	1800 501 106	http://rabbit.com.au	\$16.50* 200MB 256Kbit/s	\$35.15* 1GB 512Kbit/s	\$51.35* 3GB 512Kbit/s	\$71.41* 10GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
Rapid Net ADSL	1300 724 677	www.rapidnet.com.au	\$29.95* 200MB 256Kbit/s	\$49.95 25GB 512Kbit/s	\$79.95 35GB 512Kbit/s	\$99.95 35GB 1.5Mbit/s	✓	✓	\$129 12mths	✓
REEDS.NET Internet Services	1300 734 445	www.reeds.net.au	\$25.95* 300MB 256Kbit/s	\$45 25GB 512Kbit/s	\$45 25GB 512Kbit/s	\$81.50 35GB 1.5Mbit/s	✓	✓	\$125 6mths	✓
Reset ADSL	1300 662 670	www.reset.net.au	N/A	\$59.95 25GB 512Kbit/s	\$89.95 25GB 512Kbit/s	\$99.95 35GB 1.5Mbit/s	✓	✓	\$109 12mths	✓
Schaefer TurbNet One	1300 554 687	www.schaefer.com.au	N/A	\$49.95 25GB 512Kbit/s	\$49.95 25GB 512Kbit/s	\$89.95 35GB 1.5Mbit/s	✓	✓	\$159 1mth	✓
Schaefer TelcoNet Bundle	1300 554 687	www.Schaefer.com.au	\$34.95 15GB 256Kbit/s	\$44.95 35GB 512Kbit/s	\$44.95 35GB 512Kbit/s	\$82.95 35GB 1.5Mbit/s	✓	✓	\$109 1mth	✓
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Teetee Internet ADSL	1300 731 132	www.teetee.com.au	\$34.95 15GB 256Kbit/s	\$44.95 25GB 512Kbit/s	\$44.95 25GB 512Kbit/s	\$86.95 35GB 1.5Mbit/s	✓	✓	\$108 1mth	✓
Telstra SME & Res	1300 783 528	www.telstra.com.au	N/A	\$49.95 25GB 512Kbit/s	\$79.95 35GB 1.5Mbit/s	\$79.95 35GB 1.5Mbit/s	✓	✗	\$120 6mths	✓
Telstra BigPond ADSL	13 12 42	www.bigpond.com	\$29.95* 200MB* 256Kbit/s	N/A	\$69.95 10GB* 512Kbit/s	\$99.95 10GB* 1.5Mbit/s	✓	\$2.50	\$99 12mths	✓
TSP Broadband	13 14 86	www.tspint.net.com.au	\$29.95 No limit 256Kbit/s	\$39.95 No limit 512Kbit/s	\$39.95 No limit 512Kbit/s	\$69.95 No limit 1.5Mbit/s	✓	✓	\$129 6mths	✓
Velocity Internet ADSL	1300 557 300	www.velocitynet.com.au	\$29.95* 300MB 256Kbit/s	\$49.50* 4GB 512Kbit/s	\$79.50* 50GB 512Kbit/s	\$89.50* 24GB 1.5Mbit/s	✓	✓	\$69 6mths	✓
VitalTel ADSL Broadband	1300 856 706	www.vitaltel.com.au	\$29.95* 10GB 256Kbit/s	\$44.95 10GB 512Kbit/s	\$64.95 10GB 512Kbit/s	\$86.95 10GB 1.5Mbit/s	✓	✓	\$129.95 6mths	✓
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WA Budget ADSL	1300 365 678	www.westnet.net.au	\$29.95 500MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$79.95 1GB* 512Kbit/s	\$69.95 10GB* 1.5Mbit/s	✓	\$4.16	\$99 12mths	✓
Westnet Home ADSL	13 19 60	http://westnet.net.au	\$19.95* 200MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$79.95 30GB* 512Kbit/s	\$89.95 10GB* 1.5Mbit/s	✓	\$0.83	\$99 6mths	✓
Wild Internet ADSL • Phone	1800 809 453	www.wildsl.com.au	\$31.95 15GB 256Kbit/s	\$39.95 25GB 512Kbit/s	\$69.95 No limit 512Kbit/s	\$89.95 35GB 1.5Mbit/s	✓	✓	\$109 1mth	✓
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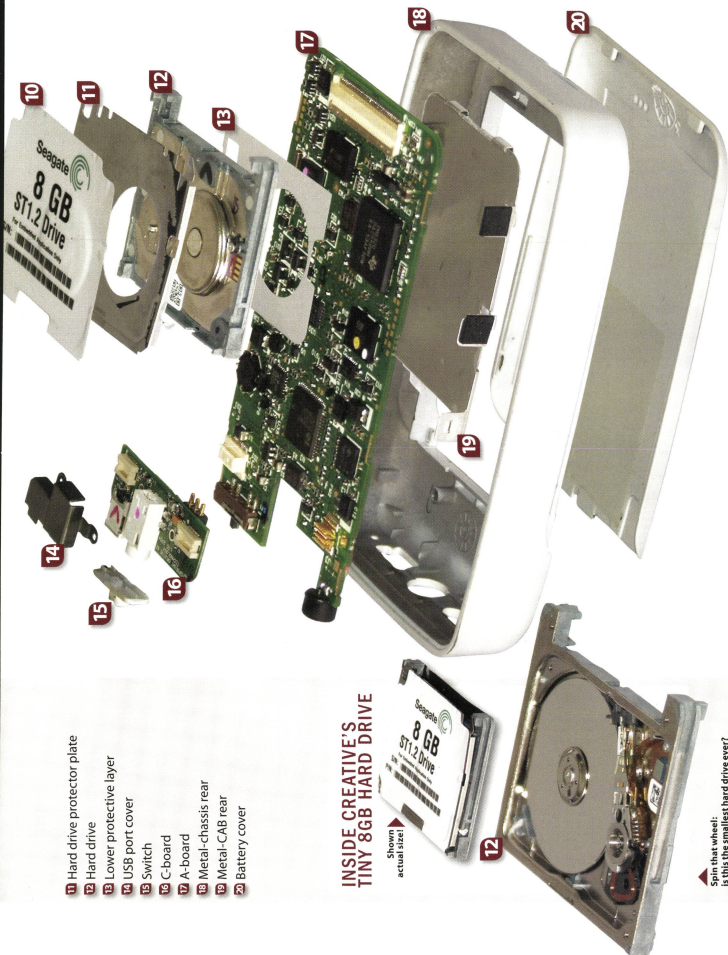
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- 6 Circuit board
- 7 Microdrive board
- 8 Data pins
- 9 Hard drive label
- 10 Hard drive label

Creative ZEN MicroPhoto 8GB MP3 player





Detangling the **DRM**

Digital rights management is touted as the only fair way to provide access to information in the digital age — yet it's also costly and confusing for consumers. **Simon Sharwood** looks at the big picture of DRM.

dilemma

If you're reading this article, you are probably liable for criminal prosecution. The reason for your precarious legal status comes from the fact that, as an APC reader, it's highly likely that you have ripped a CD into your PC (and then copied the resulting files onto a portable music player).

Both the act of ripping the CD and the act of copying it are illegal in Australia, leaving you and hundreds of thousands of other Australians open to prosecution for copyright theft. Thankfully, no-one's going to prosecute you. Even the Australian Record Industry Association (ARIA) likens home copying to jaywalking, saying both are technically illegal but seldom worth enforcing.

Note: this situation could change due to proposed amendments to the law announced by the Attorney-General, Philip Ruddock (just before APC went to press). These amendments to Australia's copyright laws would allow limited fair-use copying and, if enacted, significantly alter the DRM landscape. To see the official press release, go to <http://tinyurl.com/gclx9>. The changes could allow CDs to be ripped to MP3 on your PC, while you could potentially record TV programs using digital recorders (to watch later). Tight restrictions will apply.

The fact that Australia does not have a "fair use" provision in its copyright laws highlights extremely contentious issues in the digital age. ARIA is to blame for some of those issues, as its Music Industry Piracy Investigations (MIPI) unit has in the past asserted that you should buy a CD to listen to music in a CD player, then reacquire the songs in a format licensed for PC or iPod playback. And if you want the same song on your phone? Pay up again for another licence.

This regime makes sense in the fine print of copyright law. But common sense in the digital age surely suggests that when you buy a CD, you buy the right to listen to the music it contains however and wherever you want to. This is not just about convenience. Why should a blind person be committing a crime if they use a text-to-speech engine to read them a book?

Then there's the upgrade treadmill. Your correspondent owns several movies in both VHS and DVD format. But now that I possess my favourite flicks in digital format, why should I — or anyone else — be forced to reacquire the same set of ones and zeros — just because the march of technology means they are now encoded in a different physical format?

MAKING A QUID

Of course, there is more than reasonable logic behind copyright holders' desire to prevent illegal copying. VHS tapes were hard to copy. Digital material is infinitely reproducible — and if consumers stop paying for songs, software,



If you decided to ditch an iPod for a PSP, your DRM-protected tunes won't make the journey.

books and movies, the incentive to make them will disappear.

The content-creators' response is to use the convenient fact that once content is digital, it can be bonded to software that restricts re-use. That software has come to be known as digital rights management (DRM). It can tell machines to do things like tie music to one PC. Movies can self-destruct after a single viewing. Albums can be burned to CD once, but to refuse the request forever after.

Microsoft has its own DRM, as does Apple. The latter realised it could not start the iTunes Music Store without it, but has so far declined to make its FairPlay system more widely available.

Microsoft is willing to share its DRM with anyone that agrees to its terms (which can include a licensing fee to use its technologies). Intel's DRM scheme comes with Hollywood's stamp of approval, a nice imprimatur — but one that also means that unless AMD and others adopt the same technology, consumers will find that only Intel products meet their digital lifestyle needs.

These motivations mean the technology industry's interest in DRM is far from altruistic.

Nor do technology companies address some of DRM's most glaring imperfections, one of which is that songs bought using iTunes, for example, simply will not play on machines other than iPods.

Try to migrate the same songs when you upgrade a PC and you'll soon find yourself tearing out your hair as the software insists on a new round of purchases.

Then there's the fact that different DRM schemes are completely incompatible. This means that if you

decided to ditch an iPod for a PSP, all your DRM-protected tunes simply won't make the journey. Microsoft, of course, is proud that its DRM spans many devices and increases portability. Consumers, however, believe that Apple makes the best music players, leaving interoperability a pipedream for now.

NO-ONE EVER DIED FROM NEW TECHNOLOGY

DRM also ignores history. In the 1980s, the USA introduced legislation legalising home taping of TV shows (after TV networks tried to snuff out the VCR). At the time, the TV industry predicted doom and gloom would follow if home taping was allowed.

The reverse happened: sales of movies on videos boomed and no-one went hungry.

The same arguments regarding the destructive power of new technology were advanced for long-abandoned innovations like piano rolls. Legal battles were fought over sheet music. Radio's arrival terrified the music industry, who thought that free broadcasts would destroy their ability to sell products. The reverse came to pass.

Yet, DRM proponents continue to offer a doom and gloom vision of the future if copyright is relaxed in any way — even though their current schemes make for such a poor consumer experience.

Many therefore believe that DRM is not really about copyright, but about preserving market power. When music was only available in a physical medium like a CD or vinyl record, it required significant capital investment to record, manufacture and distribute music.

Today, a copy of GarageBand and a free page on MySpace can replace all that apparatus — a massive shift in power from record companies to artists (who often use DRM to make sure they get paid without the record company taking a cut!).

Record companies do not yet understand how they will profit from internet-borne music, other than by finding talent online. The future of their business is imperilled.

But by maintaining a hard line on copyright and enforcing it with DRM, they believe they can retain their previous middleman role, when music was always a physical commodity.

However, that role has been shown to be less than useful by Sony's DRM fiasco. In 2005 the company shot itself in the foot by releasing a copy protection scheme that opened a hacker's dream of a back door (into any PC unfortunate enough to play one of the infected CDs it released).

DOING SOMETHING ABOUT IT

Consumers were incredulous. What other industry, after all, would damage its customers' assets to protect its own business?

Others object to DRM and copyright absolutism because it can inhibit creativity. Sampling has created a whole new style of music; mashups are an exciting digital innovation. Both are impossible under DRM. This morphs into an argument which asserts that DRM deprives our culture of a resource. Fair-use provisions make it possible for people to re-use works within reason. DRM locks content down, making it inaccessible to those who wish to sample, mash or put works to charitable uses.



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- 6 SATA2 3Gb/s, Support MediaShield Storage

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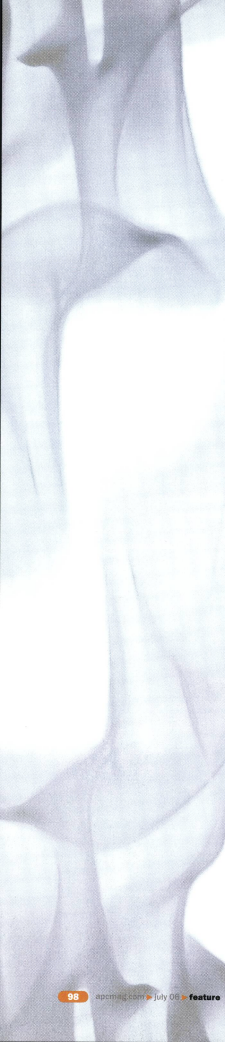
02 9381 9000
08 9204 6292
1300 653 333



08 8112 6000



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06 9229 6377



Technologists also point out that DRM is doomed to fail. No cryptosystem is perfect and most of today's DRM schemes have been quickly cracked.

WHERE TO FROM HERE?

These peculiar contradictions have led artists, lawyers and activists to fight against DRM. But it is important that their opposition does not espouse the idea that songs, movies or books should become free—or that payment should be voluntary.

Instead, they argue for sensible applications of DRM that make sense in the modern world (instead of complicating modern life). Some of their schemes will let content be distributed for nothing. Most are trying to find new ways to make sure paying creators is less painful.

Lawrence Lessig, Professor of Law at Stanford Law School and founder of its Centre for Internet and Society (<http://cyberlaw.stanford.edu>), puts this argument best in his book *Free Culture: How Big Media Uses*

shifting' (eg. taping a TV show to watch at a later time) and 'format shifting' (eg. putting a CD you have bought onto your iPod)."

ARIA and record companies believe no changes to the Act are needed at all.

The French Government has also thrown the cat among the pigeons. In March, French courts ruled that Apple must amend FairPlay so that any music player can play songs purchased on the iTunes Music Store's French incarnation. In April, French Trade Minister Christine Lagarde told Reuters that "Anytime a company restricts competition in a market, it gets the attention of regulating agencies. We have to play by the rules of the game". This statement was widely interpreted as presaging legislation to outlaw DRM.

Other innovations are less radical. Microsoft, Time Warner, Thomson, Sony, Xerox and others have partnered to create a company called ContentGuard, which aims to create DRM technologies that allow

obtained that content". Another group, the Coral Consortium, proposes DRM that means a "consumer can purchase protected content from any service provider, in any format, and play it seamlessly on any device." Its members include HP, Intertrust, Philips, LG Electronics, Panasonic, Samsung and Sony. Twentieth Century Fox Film Corporation is also on board, as is US TV network NBC. Sony BMG, Universal Music and Warners Music are contributors to the effort, but not yet full members.

Coral's ability to list these content companies among its members is, at this stage, unique. It is also telling that none of the would-be DRM standards can yet name record companies among their numbers.

Yet, even Coral's current distinction is marred by the fact that its specification, like the others, is in its infancy. All expect to publish specs in 2006 or 2007. None forecast when their standards will be implemented. And no-one is predicting who will win.



CONSUMERS SHOULDN'T BE TREATED LIKE COPYRIGHT PIRATES, AND COPYRIGHT PIRATES SHOULDN'T BE TREATED LIKE CONSUMERS

Technology and the Law to Lock Down Culture and Control Creativity

"If the only way to assure that artists get paid was the elimination of the ability to freely move content, then these technologies to interfere with the freedom to move content would be justifiable," he writes. "But what if there was another way to assure that artists are paid, without locking down any content? What if, in other words, a different system could assure compensation to artists while also preserving the freedom to move content easily?"

Lessig proposes his own scheme in the book, which, true to his beliefs, is available for free download under a Creative Commons licence (see <http://free-culture.org>).

Australia's Federal Government recognises some of these issues and last year initiated a review of our Copyright Act to investigate the need for a fair-use provision to be inserted to allow what Attorney-General Philip Ruddock called "some everyday forms of private copying that do not harm copyright owners, such as 'time-

interoperability between different DRM regimes. The company has been awarded several patents which are enforceable in Australia as well as other jurisdictions.

Sun is behind a similar initiative, known as Project DReaM (www.openmediacommons.org), touted as "an interoperable DRM architecture implementing standardised interfaces and processes for the interoperability of DRM systems". Project DReaM is open source, which removes vested interests from the DRM debate by offering a freely available standard. This move has attracted grudging praise from Lessig, who blogged that "if there's DRM, it should be at least as Sun is saying it should be."

US company Intertrust develops DRM technology and has formed the "Marlin Joint Development Association" with Panasonic, Philips, Sony and Samsung to develop DRM which, when embedded in different devices, will allow consumers to "enjoy appropriately licensed content on any device they deem convenient, independent of how they originally

What does seem certain, however, is that the industry is slowly moving to a regime that makes more sense. And amazingly, our own Philip Ruddock articulates what is slowly happening in the industry as well as anyone.

"Copyright law should be credible and respected by Australians. For this goal to be fully achieved, the law needs to address real-life situations, be practical and understood," Ruddock said, in his opening address to the Copyright Law and Practice Symposium in November 2005.

"No one should 'free ride' on someone else's creativity or investment in copyright products. On the other hand, individuals who acquire legitimate copyright products, such as CDs, should be able to reasonably use them for their own purposes without technically infringing the law.

"Everyday consumers shouldn't be treated like copyright pirates, and copyright pirates shouldn't be treated like everyday consumers." (Additional research by Timothy Groenendyk.) ■■■■

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*Super High Resolution 1440x900

The panel with faster response time can efficiently reduce residual image effect. For some applications requiring animation or video, this can enhance fluent video streaming.



*Fast Video Response Time

Panels with faster response time can efficiently reduce residual image effect. If you usually watch videos or play 3D games, this can enhance fluent video streaming.



*High Brightness & Contrast

High brightness is able to enhance images vividly displayed. Higher contrast makes black and white colors more distinct with the gradation. The depth of images can be better with the enhancement.



*Anti-reflection Coating

The treatment on the panel decreases the distracting glare. If you have to be long-time working and gaze at the screen, this feature must cause less fatigue.



*Built-In Power to Save Space

All components in the power adapter are designed into the chassis. There is no adapter occupying the desktop space.



*Multiple Input Selections

The multiple-input design allows connecting two more PCs with simple switching. This is convenient when you concurrently share the monitor of the desktop PC with your notebook, DVD or game console.

Model	FV926w
LCD PANEL	
PANEL SIZE	19" w TFT LCD
DISPLAY AREA (mm)	410.0x256.0
MAX. RESOLUTION	1440x900
DISPLAY COLORS	16.2M
RESPONSE TIME (ms)	8ms
BRIGHTNESS (cd/m²)	300
CONTRAST RATIO	500:1
VIEW ANGLE H	75/75
VIEW ANGLE V	70/60
DOT PITCH (mm)	0.285x0.285
PANEL SURFACE	ANTI-GLARE
HORIZONTAL FREQ. (KHz)	30~82KHz
VERTICAL FREQ. (Hz)	56~75Hz
BANDWIDTH (MHz)	137MHz
COMPATIBILITY	PC/MAC
INPUT PORT	
ANALOG INPUT	D-SUB x2
DIGITAL INPUT	DVI-D
PC AUDIO LINE-IN	YES
OTHER FEAT.	
BUILT-IN SPEAKERS	YES
STAND	PLASTIC
VESA MOUNT (mm)	75x75
POWER	
CONSUMPTION	60W
VOLTAGE	AC100-240V~ 50-60Hz
OFF MODE	<= 1W
POWER TYPE	BUILT-IN
REGULATION	
MONITOR Width (mm)	FCC-B, UL/cUL, CE, CB, TUV/GS, GOST, TC999
PACKING Width (mm)	457x371x210
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Windows Remote Desktop

Remote Desktop is a great tool for administrators. *James Bannan* shows you how to get the most from it — and some alternatives to consider.

JAMES BANNAN

James Bannan moved to Australia from England in 1982, but remains a stubborn Yorkshireman to the core. He graduated from Melbourne University with a BA/BCom in 1999 and went straight into IT. James worked as a support consultant at Pricewaterhouse Coopers for over three years before moving to St Leonard's College as a systems manager. Outside of work, James is a competitive ballroom dancer.



SKILL LEVEL

- Intermediate

TIME TO COMPLETE

- One hour

REQUIREMENTS

- Two TCP/IP networked computers with Windows XP.

From an administrative perspective, Remote Desktop is a terrific tool. It's free, embedded into Windows XP, and works over the TCP/IP protocol with little networking configuration. But within the constraints of Windows XP working as a standalone workstation, Remote Desktop isn't exactly what you'd call particularly configurable.

To start configuring it, enable it first. Right-click on My Computer > Properties > Remote tab. Tick Remote Assistance > Advanced; you'll see the option under Remote Control, "allow this computer to be controlled remotely". Make sure everything under Remote Assistance is not ticked (unless you want to use it) and select under Remote Desktop "allow users to connect remotely to this computer".

A quick word on Remote Assistance — it is a nice feature, but relies on MSN Messenger to function, so it's not particularly appropriate in a business setting.

Once RD is enabled, you simply need to assign a combination of local users or groups which are allowed to remotely connect to the local machine. This is a convenient way to go on machines deployed with an SOE (Standard Operating Environment) — as an administrator you can standardise local security to ensure that you can always connect to client machines. By default, the administrator group has access without being explicitly specified — it's just automatic.

If your users have administrative access to their own machines, they're still restricted from connecting out, assuming their user profile only exists on the local machine. If users are members of the local Users group, they're incapable of remoting to other machines, unless you enable it.

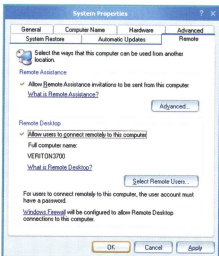
One of the useful features of RD is that as it leverages off Windows-based security, it can also leverage off Active Directory security. If you are running AD in your network, RD can be locked down to domain groups and users, so you don't need to rely on local security configured within the SOE (giving admins greater flexibility and control).

Firstly, the machine has to be a member of the AD domain. Right-click My Computer, select Preferences > Computer Name. Click Change, select the Domain radio button and type in the full name of the domain you wish to join. The machine must be able to resolve the DNS name of the domain — this is a pre-requisite of AD. Restart the machine and log on. You don't need to log on to the machine — you can just use a local user account. The main thing is that the PC joins the domain for domain security.

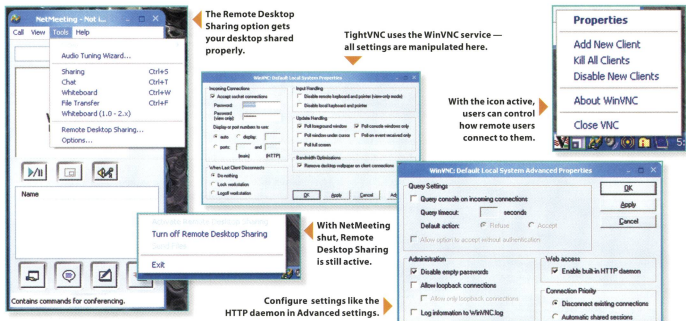
Go back to the Remote tab of System Properties, and click on Select Remote Users > Add > Locations. You'll be prompted for a username/password with appropriate credentials to browse the domain structure. Select Entire Directory, or drill down to the Users container. Click OK > Object Types > tick Groups (Users will already be ticked). Now you can make selections of users and groups existing in the domain. Try typing in *domain* and then click Check Names. From another computer on the domain, load up RD and connect to the IP address or hostname of the first machine. When the login screen pops up, drop down the Log on to menu. If you log on using a domain user, a user profile gets created in C:\Documents and Settings on the remote machine, whereas a local login will just use the existing user/profile information.

SHARE AND SHARE ALIKE

As good as RD is for remote management, it's not that great for actually helping people. You can only have one user logged on at a time, so when you connect them you forcibly disconnect the other user and lock them out. They can only unlock the workstation with the credentials you logged on with and if you log out they can be bumped back to the login screen, with the default credentials again



Access Remote Desktop settings through System Properties.



being the ones you used. So, to get something a bit more user friendly, we can resurrect a nifty app, NetMeeting.

Click Start > Run and type in **conf**. This launches the NetMeeting config wizard. It's all pretty self-explanatory — the username and email information isn't linked to anything. NetMeeting just uses this information to identify people using the service.

Once the wizard is complete, launch NetMeeting. To give it a trial run, type in the IP address of another machine which is running NetMeeting and hit the call icon. Once both users are in the meeting, click on the Share Program icon. Highlight Desktop and click Share in true color > Allow Control, and then the other user can request control from their machine. The responsiveness is pretty bad, even at LAN speeds. Not using true color speeds things up considerably, but it looks awful.

To facilitate desktop sharing, click Tools > Remote Desktop Sharing. This keeps a remote desktop service operating in the background once NetMeeting is closed and allows users to connect remotely using NetMeeting (but just get the remote desktop). Only admins can use this feature and it's not configurable. Once NetMeeting has been shut down, you'll see the icon still active in the system tray. Right-click and select Activate Remote Desktop Sharing. From the remote machine, jump into Tools > Options > Security. Tick "I prefer to make secure outgoing calls" and then make the call — this extra security level is only required for Remote Desktop Sharing — then enter administrative credentials for either the local machine or the domain — either will work. Although it's older and not quite as dynamic as Remote Desktop, NetMeeting does have several advantages. It's genuine sharing — each user can

see what's going on. It can also be secured, can incorporate video and audio communications as well as instant messaging and file transfer. It's essentially Remote Assistance without the need for MSN so, for business networks, it's still worth a look.

THE OPEN SOURCE SOLUTION

As with most apps out there these days, there's always a non-commercial option and they're generally worth a look. TightVNC is our weapon of choice here. It's a freeware remote control package, working with Windows and Unix-based OSs.

Grab the self-installing package from www.tightvnc.com — this includes the server, viewer and all documentation. Run the install, and in the Additional Tasks section, click Register TightVNC as a system service — this makes it much easier to administer, and you can have it running on the OS without needing to think about it. Start the service automatically via the setup, or go into Services (Start > Run > **services.msc**) and start it manually — it's registered as VNC Server.

You'll be prompted that no password has been set. In the Incoming Connections area, specify a password. This is only linked to the VNC service itself. If connecting over LAN, optimise by ticking Poll full screen (under Update Handling).

Once it's up and running, you'll see the VNC tray icon active in the system tray. Hover over it and it will tell you which IP addresses it's active on. There are also a stack of options in the Start Menu folder for TightVNC. From one machine, try launching the TightVNC Viewer (Fast Compression) and type in the IP address and password of the remote computer. It's very quick. One of the drawbacks is that it doesn't offer automatic

resolution scaling like RD does, so if you're connecting to a machine with a higher screen resolution than yours, you'll find yourself doing a fair bit of scrolling.

Click on the VNC icon in the top left hand corner of the connection screen and you'll get a stack of options for the current connection, such as sending Ctrl+Alt+Del commands, individual Ctrl and Alt commands, saving the connection for ease of future connections and jumping into full screen.

If you want to do some surreptitious administration of particular computers, TightVNC can be set to run in stealth. Install the app on a machine, jump into the Properties and under Bandwidth Optimizations untick Remove desktop wallpaper on client connections. Remove all the Start Menu shortcuts and then jump into the registry. Navigate to **HKLM\SOFTWARE\ORL\WinVNC3** and add a new DWORD called **DisableTrayIcon** and give it a value of 1. Then restart the computer. When it comes back up, the service will be running but there will be no visual indications, and you can connect to the machine without the user even knowing you're there.

Finally, if you ever need to connect to a machine running TightVNC from another machine which doesn't have the viewer installed, just open up a Java-enabled browser and navigate to <http://ipaddress:5800> and the remote machine pops up there and then. Performance is a little slower, but the quality is excellent and it gets the job done. You can send commands and use a clipboard feature.

So, as you can see, each application has its strengths and weaknesses, but they're all free and that's the important thing! www.pcworld.com



Mobile movie wallpaper

Recasting your PC as a home graphics factory for mobiles? It certainly beats paying inflated network prices, says *David Emberton*.

DAVID EMBERTON

David Emberton got his start as a bored IT trainee, posting free programming tutorials online when nobody was looking. Out of that, he has ended up writing books, giving talks, and working for some great companies worldwide. David's main interests now are internet software, creativity, and geek health.



SKILL LEVEL

● Beginner

TIME TO COMPLETE

● 45 minutes

REQUIREMENTS

- Macromedia Flash MX 2004 (or MX plus update); 3G or Flash Lite-enabled handset; one or more digital images.

INSIDE INFO

- Flash Lite
www.macromedia.com/software/flashlite
- Wikipedia Animated GIF
http://en.wikipedia.org/wiki/Animated_GIF
- QuickTime for Mobile (3G)
www.apple.com/quicktime/technologies/3gpp
- Trout's GIF Optimizer
<http://chemware.co.nz/tgo.htm>
- GIFWorks.com
www.gifworks.com
- Online Image Optimizer
<http://tools.dynamicdrive.com/imageoptimizer>

3 G mobiles have a lot more going for them than simple voice conversation. They also possess a near-magical ability to convert dollars into chintzy ringtones and teeny tiny pictures of Devil Vixen, Thong Secretary and Land of the Unicorns.

Why yes, it's a brave new world out there... and one in which only the man with the fastest key lock can survive the pull towards total credit depletion.

Of course, nobody likes to admit that they're lazy enough to pay asking prices for mobile wallpaper. So here's the deal. This month, we're setting you free to build your very own custom wallpaper, complete with animation effects and unlimited distribution rights. You'll not only have found a new way to save money, you'll also have a reason to shake some electrons through that desktop Bluetooth adaptor.

FLASH LITE

Our tool of choice for this wallpaper construction exercise is Macromedia Flash (now published by Adobe). Flash is great, not only because it allows for so many creative possibilities, but also because it can output to the three main animation/video formats supported by phones today.

Most common is animated GIF. Second is Flash Lite, a slimmed-down version of Flash Player, originally released for i-Mode phones in 2003. Third is QuickTime video (convertible to 3GPP), which is an excellent video format — but much less likely to be supported for wallpaper usage than the first two.

If Flash Lite is installed on your phone, get ready for some real fun. It will faithfully render photographs in full spectrum colour (animated GIF is limited to 256 simultaneous shades) and will also provide you with a very decent subset of the total Flash animation toolkit. This means nested looping, transparency, audio playback and dynamic text display, among other things.

To play it safe, the example that you'll be building from here on in is designed to export to animated GIF as well as Flash Lite (in case that's all your phone can handle).

PREPPING IMAGES

To start, find three images that would make a decent montage. In our example, we took a shot of the flag and sampled it from three perspectives.

Most likely, the pictures you select will need to be cropped in order to fit on the mobile LCD screen. If you're unsure of screen size, check the specifications in the manual. Or, if the phone came with a selection of wallpapers built in, try checking the info screen for one of them with the phone software.

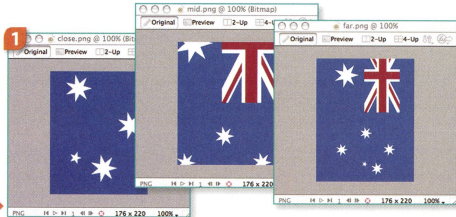
You may also want to retouch your pictures and add lighting effects or text captions at this point. Note: if you change your wallpaper fairly regularly, it's not worth sweating over every pixel — but who knows? You might even end up selling these online yourself.

TAKE IT TO FLASH

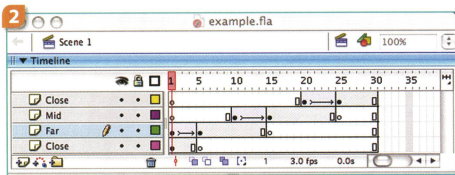
With your three pictures in hand, open up your copy of Flash and create a new document.

The very first step is to modify the document properties to match the dimensions of the phone screen — in our case, it was 176 x 220 — and set a frame-rate that makes sense.

On a Sony Ericsson V600i, Flash Lite Player runs at about three frames per second. Macromedia/Adobe claims that 6-16fps is not an unreasonable expectation, but it's important to set the frame-rate of your movie to closely match the performance of your mobile (so that the adjustments you make to timing and length on your PC are reproduced faithfully in the end).



Hop, step, jump: the same picture can be used multiple times to create a simple movie.



YOU CAN SHARE AS MANY COPIES OF YOUR MOVIE AS YOU LIKE, WITHOUT ULTRA-PREMIUM DOWNLOAD CHARGES

When done changing the document properties, find the Insert Layer button on the Timeline panel and click it twice to add two additional layers.

The effect you're aiming for is to start with one image, have the second fade in over the top (and then the third). With that in mind, rename Layer 3 to **Close**, Layer 2 to **Mid** and Layer 1 to **Far**. Then, use the F5 key or the Insert menu to make the animation thirty frames long. At 3fps, this will make the animation loop every ten seconds.

Note: unless you place a **stop()** action on the main timeline, Flash movies will loop indefinitely.

Select the first frame of the **Close** layer and use the File menu to import the corresponding image to the stage. Use the Modify menu to convert the picture to a Graphic symbol, so that it can have its transparency settings animated later on. Name the symbol **Picture 1**.

Next, drag the keyframe containing the picture to frame position 20 on the timeline. Insert a new keyframe five spaces later at position 25. Select the keyframe in position 20 and use the Properties panel to set its Tween interpolation to **Motion**. Then click on the picture itself and set its Color style to **Alpha: 0%**.

Next, select the **Mid** layer and import the second picture. Once again, convert it to a Graphic symbol. Drag the containing keyframe to position 10 and insert a new keyframe five spaces later. Go back to frame 10, set its Tween to **Motion** and zero the Alpha of the image.

Repeat these same steps for the **Far** layer, keeping the keyframes at positions 1 and 5.

Note: it can be a little confusing to know whether you're editing the properties of a frame or an object. Just remember that only frames have Tweens — and only symbol instances have Color styles.

Test your animation by hitting Enter on the keyboard to see it play through in the authoring environment. Alternately, you can use the Control menu to Test Movie in a new window.

To improve performance slightly, insert a blank keyframe on the **Far** layer at position 15; and the **Mid** layer at position 25. This will keep the number of

objects on the stage at any given time to a minimum (whilst retaining the same appearance).

At this point, you may be concerned that the animation starts off on a blank screen. To correct this, insert a new layer and drag it to the bottom of the stack and name it **Close**. In Flash, it doesn't matter if two layers have the same name. They're not retained after export.

2 Select the keyframe in the topmost **Close** layer at position 25 and Alt/Option drag it to position 1 on the bottom layer. Then insert a blank keyframe at position 5.

EXPORT THE MOVIE

When the animation is working correctly, use the File menu to Export Movie.

If your phone is Flash Lite-enabled, choose Flash Movie from the format drop-down and save as **wallpaper.swf**. Clicking Save will bring up the Export Flash Player dialog box. Choose Flash Lite 1.0 or 1.1 (or 2.0 if you have it) from the version drop-down and click OK. If memory space is an issue for you, you can also alter the JPEG quality to increase compression (unless the properties of the original bitmap images have been set for PNG export).

If your phone doesn't support Flash Lite — or you wish to send to someone else's phone which doesn't — Export Movie again, this time selecting Animated GIF from the format menu and saving as **wallpaper.gif**. The resolution should be set to 72 dots per inch, with the original dimensions given. Uncheck the box marked **Transparent** — and ensure that the repetitions setting is 0 for an endless loop.

Playing back the two files from your hard disk, you'll notice that the animated GIF is significantly larger, with a more pixelated appearance. This is due to the limited palette offered by the GIF format and the fairly primitive way in which the animation is stored. Unlike Flash, animated GIF records complete bitmap information for every single frame, not just the "keys" that define major change points.

To save space, you can also run your GIF files through an optimiser. Several free utilities for doing this are available online.

▲ Piece of layer cake: Flash allows for images to be cross-faded with just a few mouse clicks.

TRANSFER AND TEST

Now it's time to move the finished product to your mobile. (We used the Bluetooth File Exchange which comes bundled with Mac OS X. Windows users should try the Bluetooth Transfer Wizard). If you don't have Bluetooth connectivity on your desktop, other options include transferring by USB cable or infra-red — or via email should your handset have an address of its own.

In a pinch, you could also try a web-based MMS utility, but we're yet to find one that offers free outgoing messages.

Once the files are on the phone, locate and use the menu options provided to set as wallpaper. Depending on the phone software, this may either be done contextually (after selecting the file itself) or through an appearance control panel.

3 While you're there, check to see what other options are available. Our V600i allows Flash Lite to be used as wallpaper and screensaver — but for the purpose of start-up screens and contact graphics, only animated GIFs can be used.

With this simple exercise complete, you'll no doubt have plenty of other ideas for designs and effects to achieve. Some suggestions include: scripted movies that display the date and time in a creative way; animated greeting cards with sound effects; and longer mini-movies made up either of stop-motion photography or mock video using the fade effect demonstrated herein.

In any case, you will be happy to know you can share as many copies of your movie as you like, without the need to worry about ultra-premium download charges or pesky DRM locks. Just remember, if the cap plan fits, wear it. [B11C](#)



▲ Just for show: this mockup gives an impression of the example playing as a mobile screensaver.



Solaris disk management

Brendan Gregg introduces Solaris' take on disk management and shows you how to add a new disk to Solaris x86. (Just make sure you back up your data first.)

BRENDAN GREGG

Brendan Gregg has been using Solaris for around a decade, working as a programmer, system administrator and consultant. He currently works as a contractor and sometimes teaches Solaris classes for Sun Microsystems. Brendan is involved with the OpenSolaris project and is the author of the DTraceToolkit.



SKILL LEVEL

- Advanced

TIME TO COMPLETE

- Four hours

REQUIREMENTS

- Solaris 10 (the full version was provided on the APC July 2005 cover DVD).

TIPS

- CD out of the mountpoints when mounting and unmounting file systems.
- Check `/etc/vfstab` has seven fields on each line; it's easy to accidentally miss a field.
- `newfs` creates Sun's file system called UFS.
- `format` is a text based tool that isn't really user-friendly; it assumes you know what you are doing.
- `df -h` may help identify which disks you are already using (eg, `c0d0`).
- Slice 2 is reserved to refer to the entire disk — don't try changing it.

From the GUI, the Solaris file system feels like any other — there are files and there are folders. Under the surface, things are quite different; Sun uses its own variation of terminology and command-line tools to manage disks.

This Workshop is an overview of disk slices, file systems and volumes. These commonly used procedures will need to be varied for different configurations. Also, care should be taken when performing these disk-based activities — it would be wise to backup your data first (in case of a mistake — the good news is that you will probably never make that mistake again!).

TERMINOLOGY

Disks can be divided into what Solaris calls "slices" using the `format` command (format on Solaris does not create file systems). Once slices have been created, file systems can then be created on each slice. A file system is the on-disk structure which contains files and folders. File systems are mounted so that the system can use them.

The boot disk on Solaris x86 has extra complexity — it is first broken up into fdisk partitions, where different OSs can be installed (eg, dual-boot), and then the Solaris partition is broken up into slices. The terms "fdisk partition" and "slice" are loose conventions; sometimes slices are called "partitions" (eg, when using the `format` command to create them). A detailed reference for these tasks can be found at <http://docs.sun.com/app/docs/doc/817-5093/6mkisoq38?a=view>.

ADDING A DISK

- Power down the PC (as root, `init 5`); add the disk.
- Power on, log in as root and detect the new disk (`devfsadm -v`).
- Run the format command and select your new disk from the list (it is probably not disk 0). Remember the code it was given (eg, `c0d1` for controller 0 disk 1).
- If you intend other OSs to share this disk, run `fdisk` from format and break the disk into fdisk partitions.
- Create slices on the disk by running `partition` from format, then the `modify` wizard. Choose 1. All Free Hog. If you would like a single big slice, choose 0 as the free hog slice and hit enter for the other slice sizes; otherwise, customise as desired.
- When it asks "Ready to label disk, continue?", it's about to modify the disk's slices — only type `y` if you know what you are doing. Relabelling the wrong disk by mistake may lose the data on that disk.
- Exit format, using `q`.

CREATING A FILE SYSTEM

- Run `newfs` on each newly created slice to create file systems (eg, `newfs /dev/rdsk/c0d1s0`).
- Make new directories where each slice will be mounted (eg, `mkdir /data1`); these are called "mountpoints".
- Mount the slice using `mount` (eg, `mount /dev/dsk/c0d1s0 /data1`).
- Check status of the file system, using `df -h`.

TO REMOUNT AFTER REBOOTING

- Unmount the file system using `umount` (eg, `umount /data1`).
- Edit `/etc/vfstab` and add a new line for your new slice. Follow the lead from an existing slice with type of "ufs". Mount at boot should be "yes".
- Issue a `mountall`. "Already mounted" warnings are usually fine; repair other errors mountall reports.

UFS

The Solaris file system is called "UFS", but it really should be called "Enhanced UFS" — as the name UFS originates from a much older file system.

UFS is a block-based file system, which is generally regarded as suitable for storing many small files (like an OS). UFS internally is split into many small zones called cylinder groups, which allow various optimisations; for example, placing a file's data blocks in one cylinder group to prevent fragmentation. A file consists of data blocks — which contain the file's contents — and an inode, which contains information about the file (its size). A directory contains file name to inode associations; each association is called a "hard link". UFS contains a "superblock" and many backup superblocks (which contain critical geometry information about the file system itself). And lastly, UFS has no undelete capability — use backups instead.

There are some features that plain slices and UFS can't provide; for this we can use volumes.

VOLUMES

Volumes allow disks to be combined in useful arrangements, such as concatenations, stripes, mirrors and RAID5. Solaris contains a volume manager called SVM — the Solaris Volume Manager. SVM can be used either through the command line (commands that begin with `met`) or the GUI `smc`. While there are other volume managers out there with various advanced features (and Sun will soon release another, ZFS), SVM is somewhat more straightforward — and often is sufficient. [\[1\]\[2\]](#)

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Colour Management Basics

Patrick Kirsch explains how to get your pictures from camera to screen to print looking the way you want them to.

PATRICK KIRSCH

Patrick Kirsch, former designer of APC, has worked in digital media and design for more than 15 years. He has extensive experience on computers, ranging from animating on Amiga, to video post-production, print, web and multimedia. Patrick is also a musician and a home cinema buff – just don't get him started on movies.



SKILL LEVEL

- Beginner

TIME TO COMPLETE

- One hour

REQUIREMENTS

- Photoshop (version 6 or later), photo printer.

INSIDE INFO

- Pixl Test image
www.pixl.dk/Download_documents/Pixl_testimage2002_RGB.jpg
- Profile Prism
www.ddisoftware.com/prism/about.htm

IN THIS SERIES

- Part 2 – April '06
Photoshop setup.
- Part 3 – June '06
Input device profiles.
- Part 4 – July '06
Printing accurate colours.

Who's the boss? For now, we'll let Photoshop determine the colours.

The objective of colour management is to get consistent, predictable colour across a range of devices. Limitations to colour reproduction in printing include the paper's properties, the ink itself and printer resolution (this affects colour dithering). All these factors should be addressed by the printer's ICC profiles (installed along with your printer drivers in C:\WINDOWS\system32\spool\drivers\color). If you change your brand of paper or ink, you'll need to re-profile your printer/paper/ink combination yourself. This will require the use of software like Profile Prism (www.ddisoftware.com/prism/about.htm), which prints a colour target you can scan with a calibrated scanner and compares the result with the original data, generating a profile based on the differences.

To find out what on-screen colours your printer can reproduce, you can employ a very powerful feature of Photoshop: soft proofing. This is where your printer profiles first come into play.

Under the View menu in Photoshop, select Proof Setup > Custom. Next to Device to Simulate (in the drop-down list) select one of your printer profiles — preferably one for high quality glossy photo paper (assuming that's what you wish to use). Make sure Preserve RGB Numbers is unchecked, and select Relative Colorimetric from the Rendering Intent list and check Black Point Compensation. Simulate Paper Color and Simulate Black Ink. Then hit Save. Give it a descriptive name, and click OK. You'll notice your image on screen has changed in appearance. The colours may appear flatter, or slightly blue-shifted. This is as close an approximation as Photoshop can give to what your final output should look like — assuming your monitor is correctly calibrated. Try turning on Gamut Warning from the View menu. Areas of strong colour or

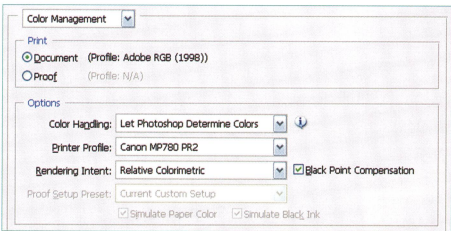
intense black may appear overlaid in grey to indicate those colours cannot be reproduced by your printer/paper combination.

Now, leaving Proof Colors and Gamut Warning turned on, make adjustments using curves and colour balance (or whatever you prefer) until the image looks more like what you intended and the out-of-gamut grey goes away. Keeping a duplicate of the original on screen for reference can be helpful.

Now, to print. Select File > Print with Preview > Page Setup > Printer > Properties. In your printer driver's dialog, turn off all reference to automatic colour or colour management, reset any colour or brightness sliders and turn off any effects. Make sure quality is set to highest and the correct paper type, size and orientation is selected, then OK everything back to Photoshop's print dialog.

Turn on More Options. Under Print, select Document. Under Options, next to Color Handling, choose Let Photoshop Determine Colors. Next to Printer Profile, choose the one that most closely matches your printer and paper combination (as you did in the soft proofing setup). Next to Rendering Intent, for natural, subdued images choose Relative Colorimetric with Black Point Compensation turned on. Or, for highly colourful and saturated images use Absolute Colorimetric. Then hit Print...

If all is well, you should have a print that matches your original on screen very closely. If not, recheck your monitor calibration and printer settings. A little trial and error may be necessary to fine-tune the process. Try different printer profiles and rendering intents to see the effect. If prints come out way too light, select a higher grade paper type in the print dialog to force the printer to use more ink. Leave your prints to dry 24 hours before handling. [EITB](#)



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TECHNOLOGY



Media PC upgrade, part 2

We're turning an old PC into a media centre. This month, *Stephen Withers* adds the remaining components.

STEPHEN WITHERS

Stephen Withers is one of the band of Workshop writers born in the UK, but he has spent his entire working life in Australia. A full-time freelance writer, Stephen is APC's longest serving contributor and is actively involved with two user groups.



SKILL LEVEL

- Intermediate to advanced

TIME TO COMPLETE

- Four hours (plus disk formatting time) for parts 1 and 2

REQUIREMENTS

- Components as listed, crosspoint, flathead and jeweller's crosspoint screwdrivers (may vary according to parts used).

Last month, we looked at choosing the components to turn an older system into a media PC. We installed a quieter power supply, a second hard disk to hold the media files, and a DVD burner. This month, we upgrade the graphics card, install a TV/radio tuner, combo USB/FireWire card, and a quieter CPU cooler, and complete the cabling.

BACK ON THE ASSEMBLY LINE

Fitting the drive bay unit carrying the USB and FireWire connectors and memory card reader is similar to fitting a DVD drive. The Sunix unit comes pre-wired, so leave the cables neatly bundled for now and feed them into the case before sliding the unit into the bay. We'll hook them up later.

As far as the graphics card is concerned, we wanted a budget model with composite video and DVI interfaces — the PowerColor 9550 fits the bill. The only drawback is that it has a cooling fan, albeit a small and quiet one. To swap the card, remove the retaining screw from the existing card's bracket, grasp the card by the top edge and pull it upwards. To reduce the risk of damage when the card is released from the edge connector, try resting one wrist on the chassis — but beware of sharp edges.

Insert the new card into the now-vacant slot. If you're replacing a PCI card with an AGP model or vice versa, you'll need to choose the appropriate slot. Make sure the card is correctly aligned and then push down firmly. The PowerColor's bracket is rather crowded and we had to temporarily remove the upper retaining screw from the DVI connector to get it into our case. Once the card was in place, the retaining and bracket screws could be replaced. The process is similar for the TV tuner and the combo USB/FireWire card (just choose a free slot for each, but additional internal cabling is needed for both).

Pinnacle's instructions for the PCTV 310i tuner suggest fitting the audio cable before installing the card, but you may find it easier to fit the card first

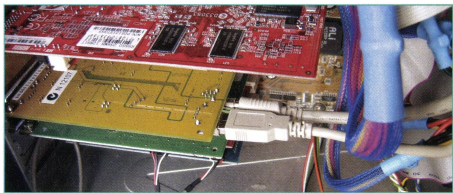
WHAT WE USED

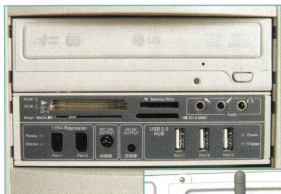
- **FSP Blue Storm 500 power supply.** Supplied by Anyware, www.anyware.com.au, (02) 9879 5788, \$159.95.
- **LG Internal 16x SuperMulti DVD/CD Rewriter GSA-4167B.** Supplied by LG, www.lg.com.au, 1800 725 375, \$89.
- **Maxtor MaXLine III 300M internal drive.** Supplied by Maxtor, www.maxtor.com.au, (02) 9369 3662, \$209.
- **Pinnacle PCTV 310i analogue/digital TV tuner with FM radio.** Supplied by Lako Pacific, www.lakopacific.com, (03) 9455 7444, \$199.99.
- **PowerColor 9550 video card.** Supplied by Australia IT, www.australiat.com.au, (03) 9560 3188, approx. \$95.
- **Sunix 5.25in Multi-Function Bay.** Supplied by Anyware, \$109.95.
- **Sunix Combo Card 1394/USB 2.0 PCI.** Supplied by Anyware, \$89.95.
- **Thermaltake POL0735 Rev 2 Extreme 4 in 1 Cooler.** Supplied by Anyware, \$53.95.

and then the cable. Depending on the location of the sound card's internal audio input, it may be easier to connect that end of the cable before installing any extra cards. It's probably most convenient to fit the 310i's infra-red remote control receiver when you set up the computer, otherwise its cable may get in the way.

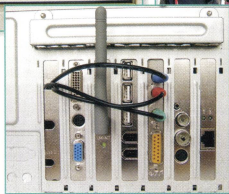
The 310i has a male coax FM socket; you'll need a balun and a short coax cable with female connectors at each end if you're using a conventional T-shaped wire indoor antenna — the various connectors are very close together, which may prevent the use of a reversing adaptor between the card and balun. The TV antenna socket is the usual female coax connector; your existing antenna cable should plug right in.

The USB and FireWire cables from the drive bay plug into the internal sockets on the combo card. At the top of the photo is the PowerColor 9550 graphics card; at the bottom is the audio cable running between the PCTV 310i tuner and the sound card.





For under-desk mounting, it might be preferable to put the DVD burner beneath the front panel, so cables can run upwards without fouling the tray.



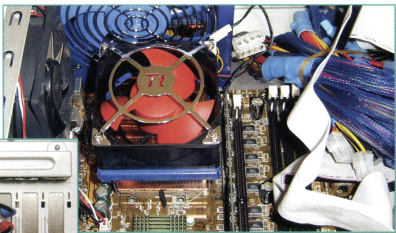
Now we'll connect the internal ports on the Sunix Combo Card to the multi-function bay. Remove the ties from the USB and FireWire cables attached to the bay and plug them into the corresponding ports on the inside edge of the combo card. The connectors are completely different, so there's no risk of mixing them up. Route the cables as neatly as you can, and try to relieve the strain at the bay end by using plastic ties to bind them to other cables.

If your PC only has external FireWire and USB ports, Sunix includes a back-panel plate that can be used to route the cables outside the case. Either way, this plate is useful to connect the three black cables fitted with 3.5mm jack plugs to the sound card's external connectors. Remove an existing back-panel plate, pass the cables through the opening and then position the new plate so the cables align with the cutouts. Secure the plate, plug the cables into the sound card (they're colour-coded), then neatly route and secure the cables inside the case. We had run out of slots, so we sacrificed the existing dual USB connector plate. This meant the cables didn't emerge next to the sound card as the AGP slot sits between that plate and the PCI slots, so we didn't worry about rearranging the PCI cards for the neatest appearance. To finish this part of the job, connect the bay's power cable to a spare drive connector from the power supply.

The multi-function bay's memory card readers show up as three removable drives, so any flash drives or other external storage you connect will be bumped further along the list of drive letters.

Changing the CPU cooler is the most nerve-wracking stage of the project. Unless you're careful, it's easy to damage the motherboard when removing the old cooler, or the processor itself when attaching

The Thermaltake CPU cooler takes up more room, but keeps the temperature down.



Full house! The audio cables connecting the drive bay unit to the sound card get in the way of the DVI connector and USB ports, but that's not a big deal. Note that the connectors on the PCTV 310i (second from right) are very close together. A little metalworking would be useful to make room for the FireWire connectors — but keep the filings out of the case!

the new one. If you're not confident, it might be wise to pay for fitting by an experienced technician.

Basically, you need to disconnect the old cooler's cable from the motherboard, remove the retaining clip and then lift off the cooler. We found it necessary to remove the RAM and case fan to gain enough room to manipulate the Socket A clip, which is released and attached with the aid of a flathead screwdriver.

Gently wipe the old thermal grease from the top surface of the CPU and apply a thin layer of fresh grease — it should be supplied with the cooler. Then follow the instructions for fitting the new cooler.

The Thermaltake Polo cooler we used provides four installation options. The simplest is to let the fan run permanently at full speed, but our objective is to reduce noise levels. Two manual speed controllers are included in the package: one that fits in a 3.5in drive bay and one that's mounted on a back-panel plate. Either is fine if you like tweaking, but you'll need to keep an eye on the CPU temperature to avoid overheating. The neatest solution — and the one we chose, as our system had no free back panel slots or floppy bays — is to fit the included temperature sensor before mounting the heat sink, then fan speed varies according to how hot the CPU is running.

A very small crosspoint screwdriver is needed to fit the appropriate clip to the Polo. The new cooler reduced the operating temperature of our system's CPU by a good five degrees, so manual control might allow fan speed (and therefore noise) to be reduced further. Between them, the Polo and the Blue Storm power supply did reduce the noise, but it turned out that the case fan was the real culprit and the computer was still noisier than desirable for a lounge room PC. That left us with a job for another

day. The moral of the story: locate the worst source of noise before you start replacing parts!

COST AND CONCLUSION

Since the parts bill came to over \$900, you'd have to ask whether this was a worthwhile project — or if the money would be better spent on a new PC. The point is that we deliberately went for an extreme makeover to cover as many aspects as possible. After all, the only major components remaining were the case and motherboard (including the CPU and RAM).

In a more realistic situation, you wouldn't change so many parts. If our PC had been composed a year younger, it would probably already have had a DVD burner and USB 2.0. The main expense would still be the TV card, but you can save money there by picking an analogue or digital tuner (rather than both) and by leaving out the FM tuner. At the time of writing, the hard drive sweet spot is 250GB, so picking a slightly smaller drive would push the total cost down. As it turned out, changing the case fan would have been cheaper, easier and more effective than replacing the CPU cooler and PSU.

If our old video card had included a composite or S-Video output, we could have spent \$140 on a hard disk, \$100 on a simpler TV tuner and \$40 on a case fan, which is a more sensible budget.

Even so, we reckon it's probably a better idea to configure an entertainment PC from scratch and we'll explore that approach in a later Workshop. [LINK](#)

NEXT MONTH

- Next month, we'll look at the software that will put our new toys to work.



Mastering Joomla, part 2

APC is building a web site with a content management system. This month, *Peter Sbarski* takes a look at the site's structure.

PETER SBARSKI

Having received first-class honours in Computer Science at Monash University, Peter is currently undertaking a postgraduate degree. He also consults businesses on IT matters and develops custom software solutions. Peter enjoys programming, writing, andragging opponents.



SKILL LEVEL

- Beginner to intermediate

TIME TO COMPLETE

- 3-6 hours

REQUIREMENTS

- Installed copy of Joomla.

INSIDE INFO

- Joomla!
www.joomla.org
- Jumba web hosting
www.jumba.com.au
- OnJoomla
www.onjoomla.org

Last month we began building a community web site using a content management system (CMS) called Joomla. We signed up for hosting, installed Joomla, ran through its global configuration, set up file permissions, configured an admin email and thought about our high-level goals for the web site. We got a lot done. If you have a question or a comment, swing by our example site at www.onjoomla.org and check out our forums.

This month we will have a look at Joomla's "managers", find out how to create categories and sections, modify menus, produce content items and add images.

ON SECTIONS, CATEGORIES AND CONTENT

Joomla can organise content into sections and categories. In Joomla's universe, sections are directories that are used to group content. Categories are subdirectories which contain specific items. For example, a News section can feature the following three categories: Site News, Community News and Club News.

When you create a new content item, an article, an FAQ or a letter, you must assign it to a particular category in a particular section. As a rule of thumb, any content which is supposed to be retired or archived in due time should be placed in an appropriate section and a category. For OnJoomla.org, we came up with the following:

Section: web site categories: site news, newflash.

Section: Joomla categories: Joomla news, tutorial, article, interview, tips and tricks, add-ins, FAQ.

We know that we could have grouped our categories and sections differently. For example,

WHERE'S MY IMAGE?

So you dragged an image from the image control to the text box. Good. But the image didn't appear? Not good. Unfortunately, life is about to become one step harder. Let's explain what happens. You are probably using Firefox and you followed our advice in the previous Workshop to install Joomla in a subdirectory (eg. www.onjoomla.org/joomla/). Firefox – when you drag and drop the image into the text box – takes the relative path of the image and converts it into an absolute path. Unfortunately, it doesn't do it quite right. Not in the way we need it to do it anyway. It is interesting to note that in Internet Explorer everything works just fine. So, you have two options: use IE or use the image dialog box.

If you want to stick with Firefox here's what you can do. Right click on the thumbnail of the image, select Properties and copy the Location of the image file. Position the cursor in the text box where you want the image to appear and then click the Insert/edit image button. Paste the URL where it says "Image URL" and click Insert. See, it's still easy!

we could've made an FAQ section with multiple categories (FAQs for the web site, FAQs for Joomla, etc.) instead. However, for our example, this should work just fine.

HOW TO ACTUALLY DO IT

To create a new section, open Joomla's Control Panel and click on the Section Manager button. Once the Section Manager opens, click on New in the top right hand corner. All you need to do now to create a new section is enter a little bit of information about it. As you can see, it's all pretty straightforward. Fill out the Title, Section Name

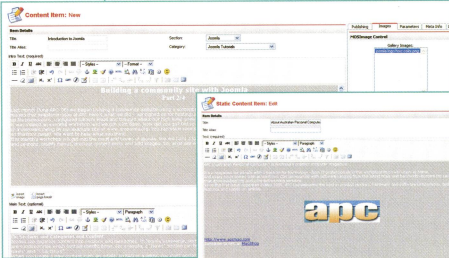
The Section Manager is under control.

Category Manager—starting to grow big.

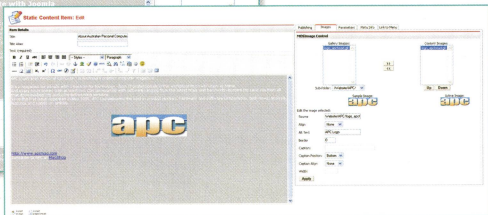
#	Section Name	Published	Order	Access	Section ID	# Categories	# Articles	# Trash
1	Website (Home)	1	1	Public	1	4	2	0
2	Joomla (Joomla)	1	2	Public	2	4	0	0

#	Category Name	Published	Order	Access	Section	Category ID	# Articles	# Trash
1	Newflash (Newflash)	1	1	Public	Website	12	0	0
2	Site News (Site News)	1	2	Public	Website	14	0	0
3	Joomla Articles (Joomla Articles)	1	3	Public	Joomla	21	0	0
4	Joomla Tips and Tricks (Joomla Tips and Tricks)	1	4	Public	Joomla	18	0	0
5	Joomla Interviews (Joomla Interviews)	1	5	Public	Joomla	26	0	0
6	Joomla Add-ons (Joomla Add-ons)	1	6	Public	Joomla	22	0	0
7	Joomla Tutorials (Joomla Tutorials)	1	7	Public	Joomla	27	0	0
8	Joomla Frequently Asked Questions (Joomla Frequently Asked Questions)	1	8	Public	Joomla	20	0	0
9	Joomla News (Joomla News)	1	9	Public	Joomla	19	0	0

Hey — a new content item! Cool. ▶



An "about" page for APC. ▶



▶ The Content Items manager is a little bit empty at the moment.



Joomla is well-equipped to deal with media — it has a media manager to upload and organise image files

and select an image to represent the section if you like. Whatever you put into the Title field will end up being shown on the web site (front end) as the section heading. And whatever you enter for the Section Name will be used for the database and the back end.

Set Access Level to Public if you want everyone to be able to read it. Otherwise, set it to Registered if only registered members can see it. If you set Access Level to Special, only the author, editors, publishers, managers, administrators and super administrator will be able to access it. Make sure that Published is set to Yes and give your section a little Description. Click Save when you are happy with your choices. Excellent work! It is time to create some categories.

By the way, if you want to remove the example sections that came with your Joomla! installation, you must first remove the categories within them.

But to delete the categories, you must delete the associated content items (via the Content Items Manager). Make sure that the trash is also empty. You will only be able to delete categories and sections when their corresponding #Active and #Trash are set to zero.

Anyway, to create a new category, go back to the Control Panel and click on the Category Manager button and then click on New. As you can see, category creation is very similar to section setup. The only difference is that you need to select the section that your category will go under. Your task now is to create and assign all the appropriate sections and categories for your community web site.

ADDING CONTENT SIMPLY

Now that our sections and categories have been created, we can get going on some content. We are going to do a small Joomla! tutorial for

OnJoomla.org. You should create a small article or a letter for your users too, just to see how it works.

So, let's do it. To create a new content item, from the Control Panel, click on the Add New Content button. Don't be overwhelmed by the first page that opens up. It is actually very simple. You should immediately see two big text boxes. In the first box (Intro Text) you will need to type in an introductory portion of your article. This part will appear on the front page (or on the appropriate section page) and entice users to read the whole article. In second box (Main Text) you should type the rest of your text.

Once you finish, select the appropriate section and category. Don't forget to give your article a title. To view it all in full, click on the Preview button. Pretty cool, huh?

Finally, on the right hand side, click on Show on Frontpage — then click on Save.

WORTH A MILLION WORDS

Alright, we now know how to add articles and tutorials and assign categories and sections, but something's still missing. That's right — we haven't got any images.

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The Static Content Manager.

Static Content Manager

Filter: _____ Order: Ordering desc - Select Author -

#	Title	Published	Order	Access	ID	Links	Author	Date
1	Joomla! License Guidelines		11	Public	5	1	Peter Sbarasi	190804
2	About Australian Personal Computer		0	Public	13	1	Peter Sbarasi	180406

Media Manager

Library: _____

Files (10 of 10)

Buttons:

The Media Manager is quite cool and friendly.

Thankfully, Joomla! is well-equipped to deal with media. It has a media manager which we can use to upload and organise image files. To run it, in the Control Panel click on the Media Manager button.

Like everything else in Joomla!, the Media Manager is very straightforward. You will need to create a directory (or use existing directories) and then upload your image files. Later, when creating a new content item, you will be able to take these images and use them together with the text. In Media Manager — to create a new directory — type a name you would like to use in the Create Directory text box and then click on the Create button in the toolbar. You are free to create a hierarchy of directories as you like. However, if you wish to use your images in content items, which is the idea, they will have to be put under the /stories directory or subsequent subdirectories. That means that any directories you create should be within the /stories directory (eg. /stories/joomla/ or /stories/web site). Do that and you will be fine. It's just another thing that Joomla! does to keep us organised.

For the Joomla! tutorial created earlier, we decided to use a Joomla! logo kindly provided by www.joomla.org. In the Media Manager we



ADDING AN IMAGE TO A NEW (OR EXISTING) CONTENT ITEM CAN BE, SUFFICE TO SAY, INTERESTING!

created a hierarchy of directories like so: /stories/joomla/tutorials/. Then we clicked on browse, selected the required file and hit Upload.

ADDING IMAGES TO CONTENT

Adding an image to a new (or an existing) content item can be, suffice to say, interesting. For most users it is a seamless experience, but there is a potential problem you need to know about.

Let's add an image to the content item you've just created. In our case it would be our small tutorial on Joomla!. To edit an existing content item go to the Control Panel and click on the Content Items Manager. Then click on the appropriate item.

Alright, here we go. On the right hand side, click on the Images tab. From the Sub-folder select the folder which contains the required image. Then select that image from the Gallery Images and move it to Current Images. Just below you will see a number of fields which you can edit. These will allow you to create a caption and modify some

properties of the image. You don't have to touch these although it would be nice if you typed something into the Alt Text text box. This text will show up if the image doesn't. Don't forget to hit Apply if you have changed any of the properties.

Here is where things can become a little bit tricky. There are a couple of ways to transfer an image to your article. The simplest way to do it is to click on the thumbnail of the image itself (you will see it under Active Image) and just pull (drag and drop) it into one of the text boxes on the left.

Another way is to order the images in the arrangement they should appear in the article (in the Content Images list box) and then use the "insert image" button to add them. When you click on the button you will see a little (mosimage) tag appear among the text. This tag specifies where the image will be. Each consecutive tag specifies where the next image in the list will appear.

Yet another way is to click on the Insert/edit image button in the toolbar. This button looks like a little painting with a tree. If you click on it, a little dialog window will appear. There you will have to specify the image URL manually. Actually, this image dialog is pretty powerful. Have a play with it if you get a chance.

From these three methods, the first method (drag and drop) is probably the friendliest. Alas, there may be a problem with it. When you try it, once you let the mouse button go, do you see the image in the text box or just an empty outline? "An empty outline", I hear you say? Oh no. See "Where's my image?" (page 110).

STATIC CONTENT

Most of the content created for your site should be appropriately categorised (ie.

"YOU HAVE NO PRIVACY, GET OVER IT."

Probably the best privacy policy we've come across can be found on the Forever Geek web site (<http://forevergeek.com/privacy.php>). It consists of just one sentence — "We will not sell your personal information to any third parties (sic) because we don't like third parties... but we like you". Short and to the point, wouldn't you say?

Unfortunately, your users may not enjoy this sense of humour and demand something a little different. You can try writing your own privacy policy but, unless you are willing to spend a lot of time, this may not be the most productive idea. So, to save your time, you can use a privacy policy generator. It may not generate a fully

featured policy for your web site but it will provide an effective framework for one.

The online privacy policy generator from the "good people" at the Direct Marketing Association can do such a thing. It is oriented towards the US but one can still use it to create a basic policy that is acceptable anywhere. Go to www.the-dma.org/privacy/creating.shtml and fill in the required fields. There are about 16 privacy questions with multiple answers. Depending on your choices, an appropriate policy will be generated for you. If you happen to find a better privacy policy generator — or want to share a few tips with us — jump on to our forum at www.on Joomla.org.

OnJoomla.org —
work in progress!

OnJoomla - This site is down for maintenance.
Please check back again soon.

Menu Manager

1 Item(s) sent to the Trash

Max Levels: 10 | Filter:

* Published status: This menu will be displayed for the proper operation of Joomla!

* The 1st Published Item in this menu (indicated by the default 'Hamburger' for the site)

#	Menu Item	Published	Reorder	Order	Access	Itemid	Type	CB
1	Home			1	Public	1	Component - FrontPage	10
2	About			22	Public	38	Link - Content Item	12
3	Journal License			22	Public	6	Link - Static Content	11
4	News			24	Public	2	Table - Content Section	1
5	Blog			25	Public	8	Blog - Content Section	7
6	Links			26	Public	23	Component - Web Links	4
7	Contact			27	Public	3	Component - Contacts	7
8	News Feeds			28	Public	7	Component - News Feeds	12
9	FAQ			29	Public	25	Table - Content Category	7
10	Search			30	Public	5	Component - Search	14
11	Wrapper			31	Public	9	Wrapper	0
12	About APC			32	Public	37	Link - Static Content	13
13	Joomla Articles			33	Public	47	Table - Content Category	31
14	Joomla Articles			34	Public	48	Table - Content Category	22
15	Joomla Fails			35	Public	49	Table - Content Category	20
16	Joomla Interviews			36	Public	50	Table - Content Category	26
17	Joomla News			37	Public	51	Table - Content Category	19
18	Joomla Tips			38	Public	52	Table - Content Category	30
19	Joomla Tutorials			39	Public	53	Table - Content Category	21

« Back | Previous | Next »

Display # 30 | Results 1 - 19 of 19

I think I should trim this menu.

placed in an appropriate section and category). There are — however — exceptions to this rule. The Privacy Policy page, the About page and the Contact page are one-off pages which don't really fit into any particular category. Sure, you could create a section just for these pages but does it really make sense to do so? It's a lot simpler to create these one-off pages and just link to them from the menu or the front page.

Joomla classifies these pages as "static content". These pages are never supposed to be retired whereas normal content items are. They are not assigned to any particular section or category and are kept separate from the rest of the content. We thought that it would be useful to create at least one static page, say an About page for OnJoomla.org, so that's exactly what we did.

To create a new "static" item in the Control Panel, click on the Static Content Manager button. Then, as usual, click on the New button. The Static Content Item only has one text box — but apart from that it is similar to what you have seen before. Don't forget to save the page once you are finished. The final step requires us to link this page up to a menu. We shall do that next.

SOME MENUS AND MORE

Now that we have a bit of content, it's time to turn to the menus. These are important to consider. They help users navigate around the web site and find content. Get them right and your site's navigation will be lauded as user-friendly and intuitive.

The menu manager in Joomla is very flexible. You can link entire sections, categories or individual items, not to mention things like components. We decided to link our categories (ie. Joomla tutorials, articles, etc.) and some static content items to the main menu.

To modify the main menu, click on the Menu Manager button in the Control Panel. Then click on the appropriate Edit Menu button under Menu Items.

When it comes to the front end, if you don't want an entry to appear in the menu, it is easy to hide it. Click on the Published icon next to the entry. If it turns to a red cross it will not be published. The ordering of the menu entries can be changed by using the Reorder up and down buttons. At any rate, to create a new menu button, click on New. A different page will open and you will immediately see a gallery of choices.

These are the things you can link to and there are a lot of them. You can link to a section or a category or an individual item. To link to a category, for example, click on the Blog — Content Category or the Table — Content Category link. Then, from the Category listing, select the appropriate section and the category you wish to link to.

To link to a static item, click on Link — Static Content and select the required article from the Static Content listing. Don't forget to hit Save once you are done.

Check the front page once you have modified the menus. Can you access content items, sections and categories? You should be able to.

UNTIL NEXT TIME

We now know how to create new content and get it to the people via the menu. What we need to do now is make our site truly about our community of users (and also make it beautiful). The next instalment of this series will describe exactly how to do that. For now though, spend time on organising your web site and creating new content.

Your users will thank you for it! [G2142](#)

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Integrating Linux, part 1

For readers who completed our Mastering Linux series, integrating into Windows is the new challenge. In this new series, Jarrod Spiga shows how to configure Linux so it can communicate with Windows.

JARROD SPIGA

Jarrod Spiga is an infrastructure and network engineer who specialises in getting Linux and Windows systems happily coexisting with each other. He currently holds CCNA and numerous MCP certifications, and dabbles in web application development in his spare time.



SKILL LEVEL

- Advanced

TIME TO COMPLETE

- Three hours

REQUIREMENTS

- Windows 2000 Server SP3 or later, or Windows Server 2003 running as an Active Directory controller;
- An installation of Linux (CentOS 4.3 and Red Hat Enterprise Linux ES 4.0 instances were used in the writing of this Workshop);
- An internet connection (used to download the latest OpenLDAP client tools and binaries).



ON THE DVD

- ADSI Edit 5.2.3790.0; ldap.conf; system-auth.
- Navigate to: From the Mag > Workshop Files.

IN THIS SERIES

- Part 1 – July '06
System authentication
- Part 2 – August '06
File services
- Part 3 – September '06
Print services

Press Ctrl+Alt+Delete to log on — authentication is everywhere in today's security-conscious world. PINs, passwords, tokens and identification are requested regularly to validate access to information, resources and facilities.

I once worked with a colleague who wrote all of his passwords down on the first page of a notepad that he always carried around. He argued that the number of passwords and PINs that he had to remember — and the varying frequencies with which he had to change them — necessitated this action because it was all too much for him to keep track of in his head. While it is easy to see his point of view, I'm sure that he'd be the first to complain when someone else gets a hold of the notepad and manages to fleece him out of all of the money in his PayPal account.

It's not uncommon to find a variety of systems within any workplace environment. Windows servers and workstations, Linux systems, networking equipment, web sites, email systems and FTP servers all generally require their own unique username and password combination. With just those few common examples, you'd need to remember at least seven different username and password combinations.

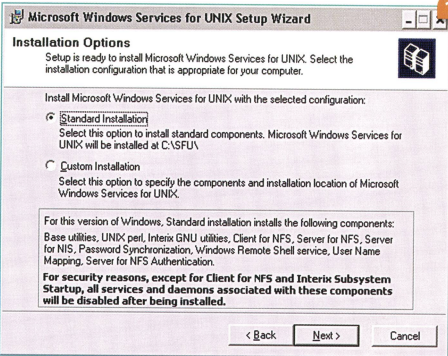
The Lightweight Directory Access Protocol (LDAP) is meant to solve that by allowing all authentication data — as well as whether a user has access to a resource — to be stored in a single central database.

When implemented across many systems, only a single username and password combination is required — which means that more aggressive security principles (including implementing password complexity requirements and requiring users to change passwords more frequently) can often be implemented without causing too many problems for affected users.

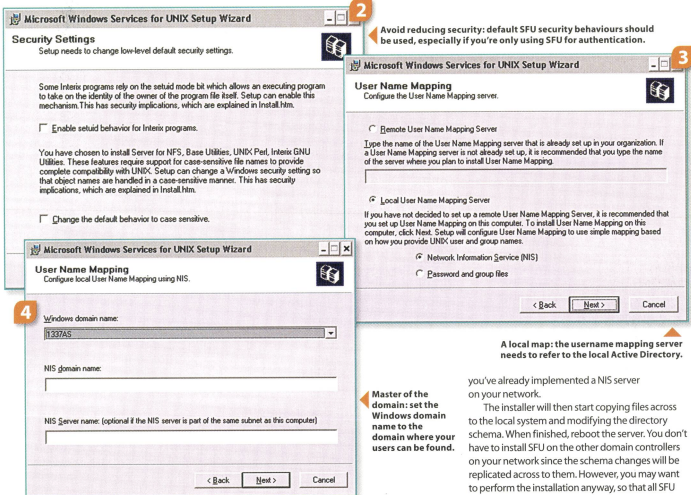
Microsoft's Active Directory Services is built around LDAP and is usually deployed to allow for single sign-on across all Windows systems within a network.

This Workshop series will guide you on how to extend the schema within ADS so that just about anything can be authenticated by it, assuming a valid configuration. This includes Linux PCs and email, web and FTP servers.

While this series focuses on Active Directory implementations, the same concepts apply to whatever LDAP implementation you use — including Novell's eDirectory or OpenLDAP.



A standard installation of Services for Unix is best if you don't want to get your hands too dirty.



A local map: the username mapping server needs to refer to the local Active Directory.

you've already implemented a NIS server on your network.

The installer will then start copying files across to the local system and modifying the directory schema. When finished, reboot the server. You don't have to install SFU on the other domain controllers on your network since the schema changes will be replicated across to them. However, you may want to perform the installation anyway, so that all SFU tools are available across all domain controllers.

Master of the domain: set the Windows domain name to the domain where your users can be found.

THE INSTALLER WILL THEN START COPYING FILES ACROSS TO THE LOCAL SYSTEM AND MODIFYING THE DIRECTORY SCHEMA

EXTENDING THE SCHEMA

Active Directory is not your standard LDAP directory — it contains many proprietary extensions that provide additional functionality within Windows domains. Some of these extensions do make things a little bit trickier to deal with — especially when it comes to the mapping of usernames and determining group memberships.

Thankfully, Microsoft released Services for Unix (SFU) and has even gone on to integrate many of the features of SFU in Windows Server 2003 R2. Once installed, SFU simplifies things by allowing POSIX-compatible attributes to be retrieved from the directory by PAM and NSS modules under Linux. Windows SFU also contains over 350 Unix utilities, the GCC 3.3 compiler, a NFS server and client and numerous other tools and libraries that can allow you to increase interoperability between Windows and Unix/Linux systems. Get the latest SFU release at www.microsoft.com/windows/sfu/downloads.

In order to install SFU, log on to a domain controller as a user who has Schema Administrator rights and extract the files from the SFU archive to a temporary location. Once all files have been extracted, run the setup.exe installer.

The first few screens of the installer are your typical "enter in your customer information" and "accept the licence agreement" screens. Once you've passed these:

- 1 Perform a Standard Installation.
- 2 Under the Security Settings screen, leave both checkboxes blank.
- 3 Under the User Name Mapping screen, select the Local User Name Mapping Server and Network Information Services (NIS) options.
- 4 At the next screen, select the Windows domain name for the domain that you wish to extend the schema of. There is no need to populate the NIS domain name or NIS server name fields unless

THE TIES THAT BIND

Active Directory won't let anyone perform unauthorised directory lookups, so the next step is to create a domain user account that various services can use to successfully bind to the LDAP server. It's highly recommended to set a lengthy, complicated password for this account (use the password generation tool at www.winguides.com/security/password.php if you have to) and to set the account so that the password never expires (and that the user cannot change the password). You may also want to restrict the account so that it cannot log on to any workstations on the domain.

While you're at it, create a new security group containing the users that you wish to allow to log on to your Linux system as members — but don't add any users to this group at this stage.

Before logging off your domain controller, copy across the ADSI Edit tool from this month's cover DVD and run it. ADSI Edit is one of the tools that is included in the Windows 2000/2003 Server support tool and can be loaded from your installation CDs. It allows you to peer into the heart of your Active Directory in order to make direct changes to the directory — however in this case, we'll just be using the tool to become familiar with the structure of the



directory and where certain attributes are stored. Firstly, expand the Domain section of the tree followed by the root node of your Active Directory. Note how each branch of the tree has a prefix (DC refers to a domain context, CN for a canonical name and OU for an organisational unit within the directory). Each object in the Active Directory is known by a distinguished name, consisting of the object name followed by the name of all parent objects.

The first thing that you need to find within the directory is the container that holds all of the user accounts to which you wish to grant access to your Linux systems. Many Active Directory implementations see these accounts in a location such as CN=Users, DC=domain, DC=com, for instance. Make a note of the distinguished name for this object.

● The second Active Directory object that you need to make a note of is the LDAP bind account that you created earlier. Lastly, determine the distinguished name of the security group that will determine whether a user can log on to the Linux system or not.

CONFIGURING LINUX SYSTEMS

Once you know these two distinguished names, log on as the root user on the Linux system that you



RED HAT, FEDORA CORE AND CENTOS USERS SHOULD RUN THE AUTHCONFIG SCRIPT AS THE ROOT USER

wish to set up for Active Directory authentication. Ensure that you have the OpenLDAP client for your distribution installed along with the nss_ldap (Network Service Switch) module (these are generally installed by default in most distributions).

Move the ldap.conf file so you have a working file to revert back to (in case things go wrong):

```
mv /etc/ldap.conf /etc/ldap.conf.orig
```

Copy across the ldap.conf file from this month's cover DVD to the /etc directory and edit the host, base, binddn, bindpw, nss_base_passwd, nss_base_shadow, nss_base_group and pam_groupdn configuration directives to reflect your setup. Pay special attention to the pam_groupdn, as this is the line that will restrict access to your Linux system (to only those users who are a member of the security group that you created earlier).

● After the OpenLDAP client has been configured, turn your attention to the /etc/nsswitch.

conf file. Ensure that the ldap option is appended to the passwd, shadow and group directives. The files option should be left intact — this ensures that you can still log on to your Linux system via any locally created accounts — in case there is no connection from your Linux system to your domain controller (assuming that you don't configure Linux to cache authentication credentials).

Finally, make configuration changes to the Pluggable Authentication Module (pam.d). Depending on your Linux distro, the process for this can involve running a configuration script and/or involves editing the /etc/pam.d/system-auth file directly. (Note: this file may be found in different locations under different distributions.)

Red Hat, Fedora Core and CentOS users should run the authconfig script as the root user. Ensure that the Use LDAP user information option is selected, along with the Use LDAP Authentication authentication option on the first screen. Don't enable TLS (TLS can be used if you have Certificate Services installed and running properly on your Windows domain), and check that the server address and Base DN are set correctly. Lastly, you should add the following line manually to the /etc/pam.d/system-auth file on the account line (before the one referencing pam_ldap.so in order to ensure that you can log on using local accounts in the event that your domain controller is not contactable):

```
account sufficient /lib/security/pam_localuser.so
```

For other distributions, refer to the sample system-auth file included on this month's cover DVD — pay close attention to the lines that refer to the pam_ldap.so shared object, since these are the lines that make the PAM daemon use the LDAP libraries.

5 Logon Workstations

In Computer name, type the computer's NetBIOS or Domain Name System (DNS) name.

This user can log on to:

☐ All computers

☒ The following computers

Computer name:

Logon denied: don't allow the LDAP Bind account to log on to any systems — this is one way to minimise the impact of sharing the LDAP Bind password.

ADSI Edit			
Name	Class	Distinguished Name	
Domain [o.1337.as]			
DC=1337,DC=as	group	CN=Domain Computers,CN=Users,DC=1337,DC=as	
OU=1337 as Hosting Staff			
CN=Domain Controllers	group	CN=Domain Controllers,CN=Users,DC=1337,DC=as	
CN=Builtin	group	CN=Domain Guests,CN=Users,DC=1337,DC=as	
CN=Computers	group	CN=Domain Users,CN=Users,DC=1337,DC=as	
CN=DefaultMigrationContainer30	group	CN=Enterprise Admins,CN=Users,DC=1337,DC=as	
OU=Domain Controllers	group	CN=Exchange Domain Servers,CN=Users,DC=1337,DC=as	
CN=ForeignSecurityPrincipals	group	CN=Exchange Enterprise Servers,CN=Users,DC=1337,DC=as	
CN=LostAndFound	group	CN=Group Policy Creator Owners,CN=Users,DC=1337,DC=as	
CN=Microsoft Exchange System Objects	user	CN=Guest,CN=Users,DC=1337,DC=as	
CN=NTDS Quotas	group	CN=HelpServicesGroup,CN=Users,DC=1337,DC=as	
CN=Program Data	group	CN=IIS_WPG,CN=Users,DC=1337,DC=as	
CN=System	group	CN=ILSR_JO,CN=Users,DC=1337,DC=as	
CN=Users	group	CN=IWAM_JO,CN=Users,DC=1337,DC=as	
Configuration [o.1337.as]	user	CN=Irbtgt,CN=Users,DC=1337,DC=as	
Schema [o.1337.as]	group	CN=LDAP Bind Account,CN=Users,DC=1337,DC=as	
	user	CN=MSSQL Server Service Account,CN=Users,DC=1337,DC=as	
	group	CN=PasswordPropDeny,CN=Users,DC=1337,DC=as	

Directory assistance: the ADSI Edit tool allows you to view (and edit) details on all objects stored in the Active Directory.

7 To use `db`, put the "`db`" in front of "`files`" for entries you want to be looked up first in the databases

```
# Example:
#passwd: db files nisplus nis
#shadow: db files nisplus nis
#group: db files nisplus nis

passwd: files ldap
shadow: files ldap
group: files ldap

#hosts: db files nisplus nis dns
hosts: files dns

# Example - obey only what nisplus tells
#services: nisplus [NOTFOUND=return]
#network: nisplus [NOTFOUND=return]
#protocols: nisplus [NOTFOUND=return]
#rpc: nisplus [NOTFOUND=return]
#ethernet: nisplus [NOTFOUND=return]
#netmask: nisplus [NOTFOUND=return]
```

Unix group attributes: all groups should belong to a NIS domain and have a unique GID.

GIVE ME ACCESS!

The final steps involved in setting this entire thing up involve making the changes to the domain user accounts that are to have access to the Linux system that you just reconfigured. This is done by adding POSIX-compliant information to the Active Directory which can be found by the OpenLDAP client libraries.

8 Go back to your domain controller and open up the Active Directory Users and Groups admin tool. Locate the security group that you created earlier and bring up its properties dialog box. Select the Unix attributes tab and populate the NIS Domain and GID fields as you see fit. Do not add any users to the group just yet.

9 Next, populate the Unix Attributes property sheet for each user that is to have access to the Linux system. Ensure that the Login Shell matches an actual shell that is installed on the Linux system. You should also make sure that the Home Directory exists on the Linux system — if not, create it and set appropriate permissions (use the UID and GID numbers when changing the permissions if you have to). In next month's guide, we'll explain how to centralise this home directory on the domain controller or on another system.

It is also important to reset the user's password in order to synchronise both the AD and Unix passwords. If this is not done, the user may have troubles logging in to the Linux system. I personally find that the easiest way to do this (in regards to business politics) is to configure the account so that the user must change their password on next login.

Once you've made the modifications to the user account, you need to add the user to the security group. Be sure to add the user under both the Members and the Unix Attributes tabs — otherwise the user will not be a member of the security group as far as your Linux system is concerned.

Once these steps have been done, the user should be able to log in to the Linux system by using their Active Directory credentials. Not only should

Europa Users Properties

General | Members | Member Of | Managed By | UNIX Attributes

To enable access to this group for UNIX clients, you will have to specify the NIS domain this group belongs to.

NIS Domain: 1337

GID (Group ID): 10000

Members:

Jarrod Spiga Properties

Member Of | Dial-in | Environment | Sessions | Remote control
Terminal Services Profile | COM+ | Exchange General | E-mail Addresses
General | Address | Account | Profile | Telephones | Organization
Exchange Features | Exchange Advanced | UNIX Attributes

To enable access to this user for UNIX clients, you will have to specify the NIS domain this user belongs to.

NIS Domain: 1337

UID: 10000

Login Shell: /bin/bash

Home Directory: /home/jspiga

Primary group name/GID: Europa Users

OK Cancel Apply Help

Unix user attributes: users also need to have a valid home directory and shell on the Linux system.

this work for users who are logging directly on to the Linux system, but users bringing up remote desktops or establishing SSH connections to the system should also be able to use their Windows username and password combination.

MAKING IT MORE SECURE

There is one caveat with this implementation — it does not use any encryption methods between the Linux system and the Windows domain controller. While this could be thought of as secure enough for a LAN environment, it's not wise to authenticate systems over the internet using this exact configuration.

Encryption between the Linux system and the domain controller can be bolted on to this guide. In order to do this, you will need to

Configure the Name Service Switch file so GIDs and UIDs defined in the Active Directory appear on the Linux system.

configure Certificate Services on your domain controller and configure all of the relevant SSL and TLS settings in the `/etc/ldap.conf` and `/etc/pam.d/system-auth` files. The original `ldap.conf` file (which you backed up, didn't you?) should contain a large number of comments that may help you out with this configuration.

NEXT MONTH

In our next instalment, we'll demonstrate how best to share files between Linux and Windows systems by providing an in-depth guide to the file sharing features of Samba and the Network File System (NFS).



Mastering video, part 4

You've finally got all the footage, now it's time to pull it together. *Seamus Byrne* sorts through the knife drawer and shows how to best use your editing tools.

SEAMUS BYRNE

Seamus Byrne first got his hands on the family Super8 in the early '80s and was hooked. Moving onto video soon after, he made many short films in the backyard, testing the limits of in-camera trick photography. Come the '90s, Seamus was quick to adopt digital editing technology as he moved into professional video direction. Having managed multi-camera shoots with artists including the Foo Fighters and Fatboy Slim, he also regularly works on short film projects for the film festival circuit.



SKILL LEVEL

- Beginner to intermediate

TIME TO COMPLETE

- 30 minutes

REQUIREMENTS

- Software install files (plus your footage).

IN THIS SERIES

- **Part 3 – June '06**
Editing concepts: rough cuts.
- **Part 4 – July '06**
Editing concepts: transitions.
- **Part 5 – August '06**
Editing concepts: fine cutting.

You've had your first look at the film as a sequenced piece of work. No doubt it's looking very rough around the edges, but hopefully you've had that first glow of pride at having pieced it all together. It is amazing what a difference it makes to see your work flow the way you had intended.

Of course, we now need to tidy things up to make it watchable. Before we get into the higher arts of fine cutting your film (that's next month), this is a good time to get technical and explore the mechanics of the various cutting tools you have at your disposal.

We'll be looking at the specific tools and cut types that are available in both Avid Free DV and Adobe Premiere Pro, as each has a distinct effect on the cut point and the surrounding clips. This will be useful to any new and many intermediate editors, regardless of the package you are using. The tools are always quite similar; names may change, but the set of options is often the same. You may find you work with only one or two kinds of cutting tools 98 per cent of the time, but getting a good understanding of the way all of the tools work could save a lot of time when you spot that one occasion where you need that specific kind of adjustment.

COMMON CONCEPTS

There are some common edit types we can cover up front that appear in many packages. Getting a good handle on how each works is a recipe for success, as they will make your time at the desktop a lot more efficient. We'll leave out the standard slice, trim, select and move type options, which should be pretty clear as they have made up the basics you have already been using. These other concepts will at times automate these basic tasks so you get through your work a lot faster.

Overlay (or Overwrite): An overlay edit will drop your new clip straight over the top of any other clips in its way, replacing the frames from its in point to its out point. No change is made to the overall length of the sequence. This is often a default mode when you add new clips to a timeline in your edit package.

Splice-in (or Insert): A splice-in edit ensures you make no change to the clips already in the sequence. Wherever the clip to be inserted is

dropped, subsequent clips will be shifted to later in the timeline to accommodate the new clip. It will be spliced-in exactly where you drop it so, if dropped into the middle of another clip, it will divide that clip as part of the edit. This edit will create space in all tracks, so if you want to keep any tracks as they were (say, a music track), make sure you lock them before using this edit.

Lift: Lift and extract are the deletion counterparts to overlay and splice-in. Lift is a tool for removing frames or clips without making any change to the surrounding clips in the sequence nor the overall length of the sequence. When you select a section of a clip or sequence you wish to lift, this edit will leave a gap in the timeline.

Extract: Extract, like splice-in, will remove frames or a clip and ensure no gap is left behind. All subsequent clips in the timeline will shift forward to fill the gap, changing the overall length of your sequence.

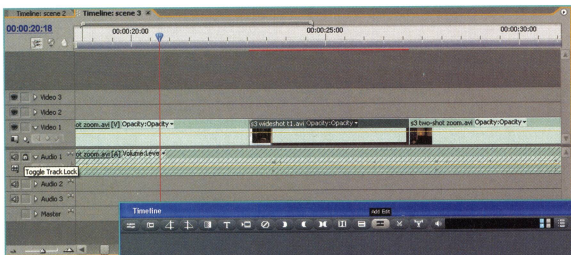
Ripple: A ripple edit is a great way to trim a clip and bring all subsequent clips along for the ride. Using a standard trim, if you removed a few extra frames from one clip, you would end up with a gap that needs to be filled. You'd need to select all the clips after the gap and then pull them all forward to remove the gap. The ripple does all these steps at once, closing the gap as you trim. Conversely, it will also let you expand a clip, shifting all later clips back to give you enough room for the new frames. You may also find a "Ripple Delete" option, which lets you delete a clip and have all subsequent clips shift forward to fill the gap.

Roll: A good friend of the ripple. The roll will maintain the length of your overall sequence, shortening the clip on one side of the edit point while lengthening the clip on the other side. An excellent tool where you want your sequence to keep a good rhythm (perhaps a music video?) or where you have synced intercuts and need to adjust the in and out change-over points without interfering with the sync up — by lengthening or shortening one and not the other.

Another use for rolling is where you want to shift the video cut slightly away from the audio cut. We'll come back to this next month, but you will find a cut that separates the video and audio transitions, even slightly, can actually be more pleasing to the audience. This is known as an L-cut or J-cut.



A RIPPLE EDIT IS A GREAT WAY TO TRIM A CLIP AND BRING ALL SUBSEQUENT CLIPS ALONG FOR THE RIDE



Avid Free DV operates under two main control modes, called segment modes.

Slip: This edit lets you shift the in and out points on a clip in the timeline without changing its overall duration. Think of it like you are looking through a window, surrounded by two other clips that, like a frame, will not be changed. By dragging left or right, you change the section of the clip that will be played without making any change to the sequence this clip is appearing in.

Slide: A kind of opposite effect to the slip, a slide lets you shift a clip in the timeline without making any changes to its own in and out points. Instead, the clips either side will be shortened or lengthened to fill the space left behind or move out of the way. Again, there is no change to the overall length of the sequence. Only the three clips involved with the slide will be affected.

AVID FREE DV

Avid Free DV operates under two main control modes, known as the segment modes. You enter segment mode by dragging a box around more than one clip in the timeline, creating a selection. By default, you will enter the Extract / Splice-in mode.

Extract / Splice-in Mode: These are part of a combined edit mode that ensures you are always bringing the sequence back together, leaving no gaps as you go. When dropping new clips in, space will be created to suit. When deleting, any space will be removed. If you delete or trim in this mode, the extraction will effectively produce a ripple edit, as all later clips will shift back to fill any space.

Lift / Overwrite Mode: The other edit mode that preserves the overall length of a sequence. When you delete, a gap will remain, and if you are dropping in a new clip this mode will perform an overlay across any other clips that may be in the way.

Roll, Slip and Slide: Unfortunately, roll, slip and slide edits are unavailable in Avid Free DV. For reference, in higher level Avid products, including the step-up to Xpress DV, a right-click while hovering over a trim point in trim mode will bring up a menu that offers both slip and slide trim options. Similarly, a roll edit becomes available by hovering over the middle of where two clips meet. This is known as the "dual-roller" trim in Avid.

ADOBE PREMIERE PRO

Premiere Pro offers its main edit tool palette in the lower right corner of the screen. Here you will find simple buttons that cover the core edit types. Or, you can use the shortcut for each — Ripple (B), Roll (N), Slip (Y) and Slide (U). The general slice tool is known as the Razor (C). You will also find an advanced Rate Stretch (X) tool that lets you adjust a clip's speed to fit the duration you drag its in or out point to. Fancy stuff!

Overlay: This is the default mode for dragging a new clip onto the timeline in Premiere.

Splice-in: This is called an insert in Premiere. To perform an insert instead of an overlay, hold down the Ctrl key as you drop in your new clip.

Lift: Lift is the default mode of delete in Premiere. Select your clip and hit delete to remove. To lift only a certain set of frames, either use the Program Monitor to specify the in and out points and use the lift button, or slice the section you want in the timeline and delete the sub-clip.

Extract: To perform an extract edit, choose Edit > Ripple Delete.

Ripple: Another way to perform a quick ripple edit is to hold Ctrl while in the general selection tool mode.

WHAT TO DO NEXT?

Test out some of these moves and have a play around with your project. Do a Save As... to play with your rough cut without worrying about having to backtrack to fix something you may have gone too far with. Testing out ideas is the best thing you can do to develop your skills. That, and watching TV and film more carefully for how clips are sewn together. So, keep your eyes peeled and when you see something interesting, try it out yourself. [EJL](#)

NEXT MONTH

- With a greater understanding of the various cutting tools now under our belt, we can start on the biggest part of the edit process — the fine cut.



ape downtime

HIGH PERFORMANCE PLAYTIME

GEAR

GAMES

BOOKS

CHIP CHAT



1. BlueSkyFrog "Skins"

● CONTACT BlueSkyFrog ● PRICE \$18-\$35 ● ONLINE skins.blueskyfrog.com ● VERDICT 4/5

Just when you thought white was the new black, colours are the new white. As we all know, people have been putting covers on and customising their mobile phones for years, but now you can put

covers on practically any bit of spare electronic kit that you've got lying around the place. All of the skins are custom-cut for each gadget – so you know that they'll fit – and with a big old range of covers,

from Solid colours, to the Stones, *Star Wars* and Swimsuit models, you can customise to your heart's content. (Or maybe just to match your shoes, if you're so inclined!)

2. MSN on 3

● CONTACT 3 ● PRICE \$5/30 days ● ONLINE www.three.com.au ● VERDICT 2/5

Convergence! Well, it's happened. These days, internet services, gaming, music-playing and camera functionality are commonplace on all sorts of phones. Kids will never stop banging away on their mobiles now.

And – what's more – 3 have integrated the MSN Messenger service into a wide range of their 3G telephones, so that now communicating with those online, as well as those on the phone, is possible.

But – that said, if you spend more than \$5 a month on SMS messages (how's the thumb, by the way?) it might just be worth your while to make everyone chat through MSN instead! ^_^ kthnx!

3. Logitech mm32 Portable Speakers

● CONTACT Logitech ● PRICE \$149 ● ONLINE www.logitech.com ● VERDICT 3.5/5

We're all about style here at Downtime this month – and your iPod needs more noise! Logitech has a portable speaker system for the moments when you want to share with an unsuspecting audience

those 1930's radio plays you've been collecting. Measuring 6 x 6 x 28.5cm, it'll make a big dent in any backpack or suitcase (even for a portable system), but it's still tiny compared to Apple's

own recently released Hi-Fi monstrosity. The mm32 runs off an either AC adaptor or battery power – so you can entertain people on the train or bus! Now, if only we could just find some stickers for it...

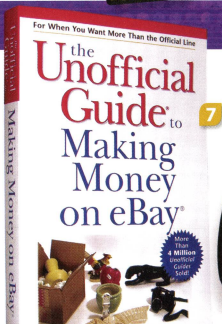
4. Defeating the Hacker

● PRICE \$39.95 ● PUBLISHER John Wiley & Sons ● ISBN 0470025557 ● VERDICT 4/5

Once upon a time, back in 1985, lowly video game writer Robert Schifreen gained top-level access to a British Telecom computer system, leading to one of the first widely publicised computer hacking trials.

Schifreen was acquitted, but a run of truly cheesy '80s/early '90s hacker movies was set in motion... but that's another story. Here we have Schifreen's sobering summary of the threats waiting to trap

unwary companies on the big bad internet. It's generic advice, but to-the-point – perfect for any overworked business-type who has to handle a small IT network on the side. It also covers Vista, which is a nice touch.



5. Google: The Missing Manual, 2nd Edition

● PRICE \$47.99 ● PUBLISHER O'Reilly ● ISBN 0596100191 ● VERDICT 3.5/5

Did you know Google searches are restricted to only 10 words? Everything else typed in the search field gets ignored by the engine (although there are a few ways around the limitation). Aside from nuggets like

this, Google: TMM also offers tips on searching within URLs only, within domain names only and using Google for finding word definitions. It's also a handy summary of all the tricky ways you can

type words to get better results. The rest of the book is about services like Google Maps and Froogle. Never heard of them? That's because some of them are useless if you live in Australia.

6. SanDisk Sansa c150 (2GB)

● CONTACT SanDisk ● PRICE \$239 ● ONLINE www.sandisk.com ● VERDICT 4/5

We don't often deal fashion advice, but we feel compelled to warn prospective buyers of new MP3 players — the iPod "white" is out. On top of Creative's Black Zen Vision:M (and other players) comes this

dark little number from SanDisk. Packing 2GB into a light 46g plastic shell, it's a good choice if you want enough songs to last a long train/bus ride (but don't want a clunky hard disk). The c150 also includes

FM radio and voice recording — and it runs on a single AAA battery. We've only one complaint: the buttons don't always seem to "click" properly on these little players. Better buttons please!

7. The Unofficial Guide to Making Money on eBay

● PRICE \$29.95 ● PUBLISHER John Wiley & Sons ● ISBN 0764598333 ● VERDICT 3.5/5

Lynn Dralle's goal is to sell US\$8,000 of stuff on eBay every month (and to gross US\$100,000 in a year). Her speciality? Dinnerware sets and cutlery. So, maybe there is some hope for those untold piles of

Warhammer figurines in your closet after all! Lynn shows how she operates her eBay business — and she's not mucking around either (she even shows examples of the records she keeps to show her

accountant). There are tips on what price to start bids, how to best list items, and how to deal with problems like returns. A handy read if you're thinking of heading into the realms of online auctioneering.

8. Jabra BT160 Bluetooth Headset

● CONTACT Jabra ● PRICE \$79 ● ONLINE www.jabra.com ● VERDICT 4/5

Jabra makes a you-little-beaut range of Bluetooth headsets for mobiles, PDAs and other gadgets. The new BT160 will set you back less than 80 bucks and — wait for it — offers a little bit of the

human touch. This, for what is otherwise the ultimate in cyborg accessories, is quite cool. Jabra includes 33 interchangeable design covers in the box — or, if you like, jump on

to www.jabra.com and you can make your own (and print it out). So, now you too can sport a stylish APC-logo'd Bluetooth headset and let the world know just how cool you are!



Condemned: Criminal Origins

Dan Chiappini puts down his soup ladle and serves up a piping-hot can of hobo whoopass.

CONTACT THQ

ONLINE www.condemnedgame.com

PRICE \$89.95



Heart-racing action.



Meandering storyline; tedious gameplay.

VERDICT

★★★★☆

Whichever bright spark came up with the concept of "Cop has gun stolen; stolen gun is used to kill buddies; original officer is left to face the music — and accused of their deaths" must be doing OK from all the royalties they're receiving (*Condemned* also borrows from this decidedly unoriginal concept). The game begins with your character investigating the latest in a series of murders matching a strange MO. A mixture of CSI, survival horror and the now-banned *Manhunt* game, your first task is to comb the crime scene looking for clues. With a bag full of cool gadgets for remote forensic work, you take photos and samples of crime-type things before wandering around in the dark in an abandoned apartment complex.

On the lam and trying to escape the FBI, you still have a few trusted friends, one of whom conveniently works in the forensic lab... While the CSI-style investigation is fun, it's a very on-rails system (and will only allow you to use the tools when there are clues to be found). Unfortunately, there's no device-selection process involved, so it becomes a bit like forensic science for dummies.

More of a survival horror game than a run-of-the-mill first person shooter, *Condemned* relies more on precise single-shot kills and conservative use of ammunition than a kick-down-doors-



and-lay-indiscriminate-smouldering-waste-to-the-area title. Once you're out of ammo, your once trusty shotgun becomes as useful as any of the pipes or chunks of concrete (or sledgehammers) you'll come across in your travels. Pistols and shotguns are few and far between and average only a couple of shots each before you'll trade them in, putting the emphasis on blocking melee attacks, rather than rushing in to deal damage. Each of the weapons is rated according to its speed, reach, damage and block value. There are even added bonuses for completing the game without using guns.

Condemned puts a new spin on the find-key-open-door cliché by requiring certain items to progress. For example, many doors require you to locate a sledgehammer or fire axe to gain access — you'll be yelling "Here's Johnny!" in no time.

The game excels in the atmosphere stakes and sees you fighting across a range of dark, drab environments including a school, a dilapidated department store and train tunnels. If you're big on zombies jumping out in front of you as you



"Hey buddy, I'm missing a couple of rounds here, have you seen them? Uh...buddy?"

skulk around torch-in-hand, then turn the lights down, turn your speakers up and wrap your fist around a plank of wood covered in nails until your knuckles are white. When the action does come, it's in short, visceral bursts that will leave your heart racing (while you peer around looking for the next attacker).

There's something really nasty about hitting a hobo with a piece of electrical conduit, but it does get tiresome after a few hours. Gory and over the top, *Condemned* is still a nice change from the ten-gun arsenal shuffle we've played so many times before.



How Michael Jackson's Thriller film clip should have ended... (abruptly, via the subtlety of a lump of 4 x 2 with nails in it).



JOYTECH

www.joytech.net

Tomb Raider: Legend

Dan Chiappini digs in the sandbox of the past — to wine and dine one very special gaming lady.

Computer games: teacher, mother, secret lover. Tomb Raider defined a generation of adventure games and is, amongst other things, largely responsible for strong female protagonist roles in games. Not to mention the odd awkward sexual awakening for the lads (discussing Lara's finer points in the change sheds during P.E.).

TR: L is part action game, part adventure — with a hefty dollop of myth thrown in for good measure.

The game sees you travelling from snowscapes and archaeological dig sites in Peru and Ghana all the way to swanky Yakuza mob boss penthouses in Japan (to attend a cocktail party). Lara takes the opportunity to don a risqué little black number which is promptly torn up when the bullets start flying. We're still trying to work out where a lady with no handbag manages to conceal a pair of .50 calibre pistols without raising any suspicion. Hmmm.

If you're not one for jumping onto crates and clambering up sheer rock faces, stop reading now. For the rest of us, there's plenty of this — intertwined with puzzles and brain teasers.

The game looks great, taking advantage of the 360's hardware to produce great-looking environments, weather effects and models. Much like Perfect Dark Zero, a lot of the walls seem to be glistening as if they've just had a hot oil rubdown. Maybe it's to fit the theme? We're not entirely sure.

Legend is full of mini games where you need to press the button that flashes up on the screen. They aren't anything too stressful, but mashing the wrong button sees you reloading the last save and trying again — and there are only so many times you can hear the corny dialogue without muting the sound.

For puzzles and action with just a sprinkling of sex appeal, check this one out. Loose trackies shed separately.



CONTACT Atari
 ONLINE www.tombraider.com
 PRICE \$99.95
 PLATFORM XBOX 360

Great visuals; puzzles break up action.
 Cheesy dialogue.

VERDICT ★★★★★

Rise and Fall: Civilisations at War PREVIEW

When Lara woke, Dan Chiappini was gone. Right away, she knew: there was another game.

Games like Command & Conquer, while a fantastic RTS experience, have always been based on nondescript locations and fictional military alliances. Rise of Nations put us in the hot seat with control over multiple ages and races, with the option to advance technologically, economically and politically. Rise and Fall: Civilisations at War (RaF:CaW) puts a slightly new

spin on the genre, allowing you to take on the roles of Alexander the Great or Cleopatra to lead your army to victory. All the familiar nations are here: Rome, Greece, Persia and Egypt (and they're all vying for supremacy).

A few features really set RaF:CaW apart from the competition, including the emphasis on naval warfare and a new take on the hero player concept. The naval aspect extends further

than just creating a fleet and sending them off to patrol the waters. Put your preferred mix of classes in a boat, push them out to sea and watch as they board enemies and battle on water.

In other RTS titles, hero characters provide stat bonuses, such as reduced damage or increased firepower for troops within range. The heroes in Rise and Fall add something special. Double-click your hero to go into a third person mode and directly control Alexander, Achilles or Cleopatra. They all operate as super characters and can do massive

damage; successfully mastering this can reverse a losing battle.

The game engine does a great job of rendering models from a height, or you can zoom right in to watch your soldiers get down and dirty with their swords. The camera rotation controls are a bit awkward at first, but they do let you swivel the map to get full vantage to watch the marauders coming over the next hill.

A nice break from Nazis and fictional future battles, RaF:CaW is challenging and fun. (Plus, you get a nice little history lesson at the same time.)



CONTACT Red Ant
 ONLINE www.risefallgame.com
 PRICE \$99.95

- Looks great; take control of heroes.
 Difficult camera adjustment.

QUALITY ACCESSORIES FOR QUALITY ENTERTAINMENT



Rogue Trooper

Could it be that the Blue Man Group are genetic freaks from Nu Earth? Declan Kennedy thinks so.

Rogue Trooper comes from the 2000AD stable, and tells the tale of a Genetic Infantry (GI) trooper who saves his people from total destruction (with a little help from the personalities of his deceased squad buddies, which have been implanted in his gear).

The setting is Nu Earth, a place where the people of the south (Southerns) and the people of the North (Nordrs) battle constantly for control of the planet. The GI are the soldiers of the Southern army — bred to fight the war so that

the people of the south can get on with their lives.

There is a story, but it's certainly secondary to the game, which offers a surprisingly enjoyable blend of third-person action and stealth, with a heavy emphasis on using the environment for cover. The gameplay tends towards action primarily, but the stealth mechanics are accomplished and add a welcome extra element to the mix.

One nice feature of the game is the absence of ammo drops.

Instead, Rogue collects "salvage" (from fallen enemies and piles of debris) which can be converted into items by his backpack (called Bagman). Rogue's gun (Gunnar) can be modified and deployed as a sentry, effectively making it seven distinct weapons. His helmet (Helm) can be left on doors to hack them. Add to this four different grenade types (and micro-mines) and there are lots of fun tools at your disposal.

Graphically, the absence of complex surface shaders makes the game look a bit on the dated

side, but the textures are crisp and high resolution, and the environments and characters are very stylishly realised.

Rogue Trooper is enjoyable fare, but it's no gamers' epiphany. It's just a fun six hours.

CONTACT	Atari
ONLINE	www.atari.co.uk/gps/rogueTrooper
PRICE	\$69.95
✓	Varied locations; some innovative ideas.
✗	Looks, like, so last-gen; is that the Quake 2 palette?
VERDICT	★★★★☆



Agatha Christie: And Then There Were None

William Maher affixes his monocle and sets about solving the case of the missing zombies.

I say, old chap: are you entirely sick of first person shooters? This old-school point-and-click detective story is about as far as you can get from the world of Half-Life 2. (There's even a roast dinner involved.)

Along with an assortment of other dinner guests, you have been invited to the notorious Shipwreck Island — only to find a chilling message left by your mysterious hosts. Then, the murders begin.

If you're a Sherlock Holmes buff (or can't get enough of Cluedo),

you'll probably love skulking around this 1930s mansion set on the coast of South Devon.

Amazingly, no-one seems to bat an eyelid as you rifle through their rooms, bathrooms and balconies looking for clues.

Even more amazingly, each person seems to have carelessly left small notes lying around to tip you off about their motives. Hercule Poirot never had it this easy.

The main characters don't seem to get up to much — they have dinner, play pool, sit on the

lounge and mooch around in their rooms. If you're expecting the living dead to suddenly walk out of the basement, you're way off the mark. This is more about finding hidden safes and questioning elderly spinsters — if it's zombies you're after, go play Resident Evil.

Still, the atmosphere here is compelling, with great audio and a raging storm outside to add to the gloom. A lot of the game is spent wandering about with haunting piano music (always the same tune though) in the background.

If only there was a little more freedom. I wanted to shove the butler aside and see what was in that stupid pot he'd been stirring for twenty minutes. And who wouldn't want to challenge the annoying playboy to a fist-fight? Sadly, picking random fights with upper class aristocracy isn't an option.

To their credit, the developers say there are several possible endings — plenty of opportunities for you to hear the phrase "That seems like very odd behaviour!" time and time again.

CONTACT	QVS
ONLINE	www.agathachristiegame.com
PRICE	\$69.95
✓	Replayability to get alternate endings.
✗	No zombies; limited freedom.
VERDICT	★★★★☆

"Well, I never thought I'd say this, but I miss fragging zombies!"



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WORLD WARCRAFT

1.CREATE

Create your own unique hero from one of 8 player races and 9 different player classes. Then customize your character with hundreds of different hair, skin and outfitting combinations.

**NEW
LOW
PRICE!**

2.CONNECT

The game doesn't require a super-computer to play*. Just install it, and you're one-click away from Blizzard's dedicated World of Warcraft game network.

3.ENGAGE

Whether you're a novice or veteran, a world of bold adventure and mighty deeds awaits. Even if you only have a few minutes to play, Blizzard's superior quest system ensures an adventure is always waiting.

PC
MAC
DVD-ROM
ONLINE



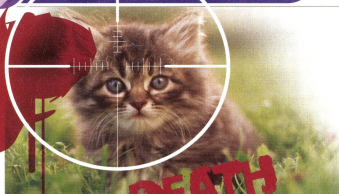
www.worldofwarcraft.com.au

ONLY ONLINE MODE POSSIBLE. FURTHER RESTRICTIONS APPLY.

*Intel Pentium® III 600MHz, 32MB RAM, 33MB 3D graphics card. A USB available MB space. Requires broadband connection.

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DIGITAL LIFESTYLE

So you like killing stuff, huh? But you also like air-con. And sitting. And eating chips with your other hand. Well don't worry, buddy — for the wonders of the modern age are upon us. Welcome to the era of internet hunting, where cowardly couch-lovers can exercise their primal aggression, all from the safety of a broadband connection. The Kentucky Legislature recently joined several other US states in outlawing this neoteric abomination — which enables PC users to aim and fire remote-controlled rifles at real, live animals. Just sign up, pay a monthly fee and you too could unnecessarily be adding to the amount of suffering in this world. And they said Web 2.0 wasn't hurting anybody.



Not tonight dear, I have a headache

Come on. You know your girlfriend would love to wake up in the middle of the night and feel this resting at the foot of her bed. Fresh from lurking in the air-conditioning ducts of Half-Life 2 to you, it's the HL2 Head-Crab Collectible! A true Valve must-have, this plush little fella was put on Earth for just one reason: to replace teddy. At quarter-scale (with an approx. 6in body), apparently the "mouth will only fit over your pet's head". Sorry, nanna. However, "the legs can be posed and are handy for hooking over anything from bedposts to computer monitors" and "the Head-Crab's underside maw, although soft and plush, was made with great attention to detail". Now, that is reassuring.

Captains of industry unite!

Origami. It's an ancient Japanese paper-folding art form. It's also the former codename for the recently revealed small form factor concept PC. But the two notions aren't necessarily all that different. For a start, they're both small, finicky and delicate. And, they're both hard to get right the first time. So found out Korea's executive officers of Samsung, Microsoft and Intel, as they attempted to promote the new Q1 device at a recent press conference in southern Seoul. In a cacophony of cringe, Kim Hun-soo (VP of Samsung PC), Yoo Jae-sung (Microsoft Korea president) and Lee Hee-sung (president of Intel Korea) respectively took to the stage to take turns in demonstrating their inability to turn the device on — much to the horror of their assistants. When Kim eventually succeeded, the battery lasted three minutes. Nice. Would you buy an unproven PC platform from these men?



Discourage Mr Ant — encourage him don't!

Looks like someone clearly hasn't been taking our advice! [See APC May, page 133.] And yes, reader Allan Sanderson, we mean you! Allan kindly sent in these pics of his ambushed all-in-one and offers the following recommendations for anyone caught in a similar predicament: "Do not use an Ant-Rid-like killing method. Sure, the ants end up dead — but all the insides of your device end up sticky. I currently have my printer in a garbage bag sprayed with surface spray and tied up airtight. Let's hope that does the trick!" Thanks for the tip, All. And afterwards, don't forget to "Say good-bye by destroying his colony."



We believe that APC is the best technology magazine, but we want to make it even better.

apc

Every couple of years, we give our readers the chance to comment on the magazine and tell us what they'd like to see in it. This helps us finetune APC and even introduce new features based on popular demand.

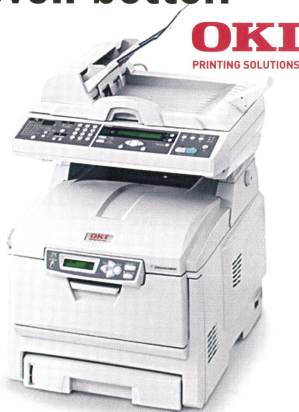
All you have to do is take a few minutes to comment on APC and tell us a bit about yourself as well.

To be in the running for our amazing prize, an OKI C5540 Multi Function Printer valued at \$3,442 RRP, complete every question in the survey and mail the completed survey to us.

The prize will be awarded to the reader who provides the best answer to the very last question, on page 132, as judged by our panel.

The OKI Printing Solutions C5540 MFP is the fastest and only single pass colour A4 Multi Function Printer on the market. Perfect to be shared with a workgroup, or used as a standalone device, the C5540 MFP delivers up to 16 pages/copies per minute (ppm/cpm) colour and 24ppm/cpm mono — up to three times faster than the best performing inkjet MFPs. It offers all the benefits of PCL and PostScript compatibility and delivers 1,200 x 600dpi output resolution. There's even the option of automatic duplex printing, allowing you to produce impressive double-sided documents and booklets.

The C5540 MFP also features networking scanning which allows you to instantly scan and archive documents onto the network, or email a scanned image from the MFP as easily as if emailing from a PC. An automatic document feeder enables you to scan up to 50 sheets hassle-free. ScanSoft PaperPort document management software makes filing and storing documents simple and the PC fax software enables you to send faxes from your PC using the OKI C5540 MFP without the need for a separate telephone line.



APC magazine Reader Survey - CONDITIONS OF ENTRY 1. Instructions on "How to Enter" and prizes form part of these Conditions of Entry. Participating in this promotion is deemed acceptance of these Conditions of Entry 2. The promotion is open to all residents of Australia except employees and their immediate families of the Promoter and agencies associated with this promotion. 3. The Promoter reserves the right, at any time during or after the closing date of the promotion, to verify the validity of entries and to disqualify any entrant who tampers with the process or who submits an entry which is not in accordance with these Conditions of Entry. Failure of the Promoter to enforce any of its rights at any stage does not constitute a waiver of those rights. 4. The Promoter accepts no responsibility for late, lost or misdirected entries. 5. To enter, complete the survey in the July issue of APC and simply tell us in 50 words or less: "Which technologies do you think will headline the next six covers of APC?" (from August 06 onwards). Entries are to be sent to: APC magazine Reader Survey, Reply Paid 5526, Sydney NSW 2000. 6. The promotion commences 14 June 2006 and closes at 11.59pm EST on 31 July 2006. Only entries completed on the original survey as contained within the magazine will be accepted. Only one entry per person permitted. This is a game of skill and chance plays no part in determining the winner. Each entry will be individually judged according to how closely it matches the editor's planned schedule. The judges' decision is final and no correspondence will be entered into. 7. The promotion will be judged by a panel appointed by APC magazine on 14 August 2006. Winner will be notified by mail. 8. The best entry, as determined by the judges, will win an OKI C5540 Multi Function Printer valued at \$3,442 RRP. 9. Winner must allow 2-6 weeks for prize to be delivered. 10. Prize is not transferable or exchangeable and cannot be taken as cash. Promoter accepts no responsibility for any variation in the value of the prize. The Promoter shall not be liable for any loss or damage whatsoever which is suffered (including but not limited to indirect or consequential loss) or for personal injury which is suffered or sustained, as a result of taking the prize, except for any liability which cannot be excluded by law. 11. By entering the promotion, unless otherwise advised by the entrant, each entrant consents to the information they submit (with their literary piece) being entered into a database and the Promoter may use this information in any media for future promotional, marketing and publicity purposes without any further reference or payment or other compensation to the entrant. All personal details of the entrants will be stored at the office of the Promoter. A request to access, update or correct any information should be directed to that office. In addition, all literary pieces become the property of the Promoter and it is a condition of entry that those literary pieces may be used by the Promoter for their own promotional, marketing and publicity purposes without restriction. 12. The Promoter is APC Magazines Ltd of 54 Park St Sydney NSW 1028. ABN 18 053 273 546.



1 IF YOU WON \$10,000 TO SPEND ON TECH PRODUCTS, WHAT WOULD YOU BUY?

2 THINKING OF RECENT ISSUES OF APC (LAST 12 MONTHS), WHAT HAS BEEN THE MOST INTERESTING ARTICLE YOU HAVE READ?

3 HOW OFTEN DO YOU READ APC?

I read it every month ☐
 I read it most months (2 out of 4) ☐
 I read it occasionally (1 out of 4) ☐
 First time ☐

4 IS THERE ANYTHING ELSE WE COULD INTRODUCE, OR BRING BACK, TO IMPROVE APC FOR YOU? (eg. HELP SECTIONS, MORE GAMING etc.)

5 HOW LONG HAVE YOU BEEN READING APC?

Less than 6 months ☐
 6-12 months ☐
 1-2 years ☐
 3-4 years ☐
 More than 4 years ☐

6 DO YOU READ APC FOR...

Personal interest? ☐
 Work purposes? ☐
 Both? ☐

7 WHAT IS YOUR FAVOURITE SECTION OF APC?

8 WHAT HARDWARE PRODUCTS WOULD YOU SPECIFICALLY LIKE TO READ MORE ABOUT? (eg. PCs, PERIPHERALS, STORAGE DEVICES, MOBILE TECH, CAMERAS, HOME ENTERTAINMENT, NETWORKING TECH)

9 HOW IMPORTANT ARE THE FOLLOWING SECTIONS OF THE MAGAZINE?

SECTION

VERY IMPORTANT

IMPORTANT

NEUTRAL

NOT IMPORTANT

Technotes (news) ☐Extreme Geek ☐Opinion (Windows/Linux) ☐Watchdog ☐Epinions (reader letters) ☐Tech Features ☐John Gillooly Labs Intro ☐Labs Reviews ☐Labs Challenges ☐Best Tech Buys ☐Future Tech ☐Exploding Tech ☐How it's Done ☐Workshops ☐Downtime Gear Reviews ☐Game Reviews ☐Chip Chat ☐

10 WHAT KINDS OF SOFTWARE APPLICATIONS WOULD YOU LIKE TO READ ABOUT? (eg. SECURITY, DESIGN, VIDEO EDITING, SERVER / NETWORKS, WEB DESIGN)

11 WHAT OPERATING SYSTEMS DO YOU USE? (eg. XP PROFESSIONAL, FEDORA CORE, UBUNTU, UNIX, MAC, SOLARIS)

12 DO YOU LOAD THE APC DVD?

All the time
Occasionally
Never

☐
☐
☐

13 HOW IMPORTANT IS THE APC DVD TO YOU WHEN DECIDING WHICH COMPUTER MAGAZINE TO PURCHASE?

Extremely important
Important
Of little importance

☐
☐
☐

14 WHAT IS THE BEST SOFTWARE APPLICATION YOU HAVE RECEIVED ON THE APC DVD?

15 DO YOU EVER LEND THE APC DVD TO YOUR MATES? (BEARING IN MIND THIS IS PERFECTLY LEGAL!)

Yes ☐ No ☐

16 WOULD YOU BE INTERESTED IN BEING ABLE TO DOWNLOAD SOFTWARE STRAIGHT FROM THE APC WEB SITE RATHER THAN RELYING ON THE DVD?

Yes ☐ No ☐

17 WHAT PURCHASES HAVE YOU MADE AS A RESULT OF INFORMATION ON THE DVD?

18 HOW INTERESTED ARE YOU IN THE DIFFERENT COMPONENTS ON THE DVD?

COMPONENTS	VERY INTERESTED	INTERESTED	NEUTRAL	NOT INTERESTED
Video news	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free games	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Game demos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trial software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full-versions of popular/home applications (ie. Golf Tutor, 3D Home Design)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full versions of business-related applications (ie. Project Management, Accounting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Linux distributions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full-version utilities (ie. Registry Mechanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freeware utilities (Toolkit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional training tutorials (ie. programming, networking)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video how-to's (ie. How to build a PC, Windows XP tips)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other

**19** HOW MUCH DO YOU AGREE WITH THE FOLLOWING STATEMENTS?

STATEMENT	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
APC keeps me informed about cutting-edge technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APC gives me a big picture overview of technology trends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APC is an independent source of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APC is an authoritative and credible voice on technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APC helps me complete interesting computing projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APC is an important source of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
when I make IT purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have purchased products because I saw them advertised in APC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have bought or inquired about products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I trialled on the APC DVD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd like to see a bigger Help section in APC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd like to see wider gaming coverage in APC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd like the APC Workshops to be more challenging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd like to see some case studies on how technology is implemented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd like to see more personal tech covered, (eg. digital cameras, MP3 players etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20 WHAT ARE YOUR FAVOURITE INTERNET SITES FOR:

- a) Purchasing computer/IT products? _____
- b) General online shopping? _____
- c) IT related news? _____
- d) IT product reviews? _____
- e) General news? _____
- f) Gaming? _____
- g) Scientific info? _____
- h) Blogging? _____
- i) Downloading software? _____

21 HOW OLD IS YOUR PC?

- Less than a year ☐
- 1-2 years ☐
- 3-4 years ☐
- 5 years and over ☐
- Don't know ☐

23 WHAT IS YOUR CURRENT BRAND OF COMPUTER AND WHY DO YOU OWN IT?

a. PC BRAND _____

b. WHY? _____

22 WHAT IS YOUR FAVOURITE STORE TO PURCHASE COMPUTER/IT RELATED PRODUCTS FROM AND WHY?

a. STORE _____

b. WHY? _____

24 DO YOU HAVE INTERNET ACCESS AT HOME?

- Yes - Wireless ☐
- Yes - Broadband ☐
- Yes - Dialup ☐
- No ☐



25 HOW USEFUL ARE THE FOLLOWING SOURCES WHEN IT COMES TO BUYING NEW IT PRODUCTS?

	VERY USEFUL	USEFUL	OCCASIONALLY USEFUL	TOTALLY IRRELEVANT
Vendor sales material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retailer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manufacturer's web site on the product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Third party media web sites on the product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology blogs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PC magazines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your IT manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your tech-savvy colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT section in newspaper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26 WHAT OTHER MAGAZINES DO YOU REGULARLY READ?

- Australian T3
- Atomic
- CFO
- CIO Australia
- ComputerWorld
- Image & Data Manager
- MIS Australia
- PC Authority

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- PC World
- Technology & Business
- Men's lifestyle magazines
(eg. Ralph, Men's Style)
- Motoring magazines
(eg. Wheels, Motor)
- Business magazines
(eg. The Bulletin, BRW, Money)

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• Other ☐ (Please specify) _____

27 DO YOU HAVE A DOWNLOAD LIMIT ON YOUR INTERNET ACCESS?

Yes ☐
No ☐

28 HOW MUCH HAVE YOU SPENT ON INTERNET PURCHASES IN THE LAST 3 MONTHS?

- 0-\$49
- \$50-\$99
- \$100-\$199
- \$200-\$499
- \$500+

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29 WHAT REASONS WOULD COMPEL YOU TO SUBSCRIBE TO APC?

- Computer-specific prizes
- Home entertainment and personal tech prizes
- Educational-based prizes
- Subscription price discount
- Free gift
- Access to the APC Club
- Convenience and reliability

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30 ON AVERAGE, HOW LONG WOULD YOU SPEND READING AN ISSUE OF APC?

- Less than 30 minutes
- 30 mins - 1 hour
- 1 - 3 hours
- More than 3 hours

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31 YOUR WORK STATUS?

Full-time
Part-time
Looking for work
Retiree
Student
Don't work

☐
☐
☐
☐
☐
☐

(IF RETIRED, DON'T WORK or STUDENT —
PLEASE IGNORE QUESTIONS 32-33)

32 YOUR INDUSTRY SECTOR? (COMPUTER/ IT, AGRICULTURE, GOVERNMENT etc.)

33 YOUR JOB TITLE? (GENERAL MANAGER, SOFTWARE PROGRAMMER, SALES MANAGER, GRAPHIC DESIGNER etc.)

34 ARE YOU?

Male

☐

Female

☐

35 YOUR AGE GROUP?

Under 14

☐

35-44

☐

15-17

☐

45-54

☐

18-24

☐

55-64

☐

25-34

☐

65+

☐


HAVE YOUR SAY TO
WIN!

OKI® **apc**

To enter the competition, please answer the following question and provide your personal details below. Tell us in 50 words or less:

What technologies are most likely to be featured on the covers of APC for the next six months? (From the August 06 issue on.)

The entry judged to be the closest to those planned by the editor will win the prize.

Send all of the pages of your completed survey to:

APC Reader Survey

Reply Paid 5526

Sydney NSW 2000

Answer: _____

Name: _____

Address: _____

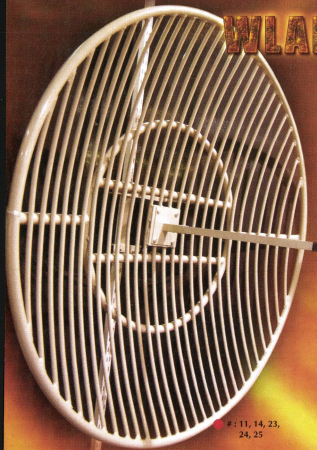
Phone Number: _____

Email: _____

☐ Please tick if you do not consent to being contacted by APC at a later date for further research purposes.



WLAN & COMMUNICATION



: 11, 14, 23, 24, 25

Extend your Wireless LAN to reach your long distance communication Network. Up to 30KM (May need Booster / Amplifier). Remember, the higher the gain the longer the range.

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: 10, 15, 26, 27, 28



: 7, 19, 31



: 8



: 9, 32



: 1, 13, 21, 22



: 12, 16



: 6, 18, 29, 30



: 5, 17, 33



: 3, 20, 34



: 2



: 4



SLT-4-0825



SLT-3-0825



SLT-2-0825



3M, 6M, 9M CABLE



N-Type Male to Male



N-Type Female to Female



N-Type Male/SMA Male



SMA Female/RP SMA



SMA Female/PP SMA with 10cm Cable

Model Number	Frequency Range (MHz)	Dimensions (mm)	Gain (dBi)	Price
1 ADS-2.4 AT	2400 - 2483	1200	12	129.90
2 AOM-2.4 CII	2400 - 2483	Ø 220	7	24.90
3 ADS-2.4 CE	2400 - 2483	50 x 205	5	18.90
4 AOP-2.4 L	2400 - 2483	95	3	12.90
5 ADS-2.4 BKE	2400 - 2483	88 x 70 x 120	8	59.00
6 ADS-2.4 BKC14	2400 - 2483	220 x 190 x 45	14	119.00
7 ADS-2.4 G18	2400 - 2483	1220 x 180 x 80	18	395.00
8 ADS-2.4 C10	2400 - 2483	60 x 510	11.6	136.50
9 ADS-2.4 C16T	2400 - 2483	Ø 80 x 700	15	179.00
10 ADS-2.4 A	2400 - 2483	600 x 900	24	149.00
11 ADS-2.4 SPL15	2400 - 2483	Ø 1500 x 880	29	799.00
12 ADS-2.4 B	2400 - 2483	Ø 260	16	189.00
13 ADS-3.5 A	3400 - 3600	1000	11	188.50
14 ADS-3.5 P9	3400 - 3600	Ø 900	27.5	836.28
15 ADS-3.5 SP10	3400 - 3600	600 x 900	27	327.26
16 ADS-3.5 BSI	3400 - 3600	Ø 180	14	277.54
17 ADS-3.5 BKE	3400 - 3600	88 x 70 x 120	8	76.42

Model Number	Frequency Range (MHz)	Dimensions (mm)	Gain (dBi)	Price
18 ADS-3.5 BKB16	3400 - 3600	88 x 70 x 120	16	175.90
19 ADS-3.5 G	3400 - 3600	700 x 160 x 60	18	477.60
20 AOM-3.5 CE	3400 - 3600	205	5	29.62
21 ADS-5.1 A	5150 - 5250	Ø 20 x 600	12	188.53
22 ADS-5.8 A	5725 - 5850	Ø 20 x 540	12	189.50
23 ADS-5.1 P9	5100 - 5300	900	31	770.29
24 ADS-5.8 P9	5470 - 5725	Ø 900	31.5	625.17
25 ADS-5.8 P9	5725 - 5850	Ø 900	32.5	782.79
26 ADS-5.1 SP69	5100 - 5300	400 x 600	28.5	231.36
27 ADS-5.8 SP69	5470 - 5725	400 x 600	28.5	231.36
28 ADS-5.8 SP69	5725 - 5850	400 x 600	28.5	231.36
29 ADS-5.8 BKB	5725 - 5850	250 x 220 x 60	20	296.88
30 ADS-5.8 BKC60	5725 - 5850	190 x 216 x 50	15	284.78
31 ADS-5.8 G	5725 - 5850	370 x 170 x 65	18	399.00
32 ADS-5.8 C17	5725 - 5850	320	15	231.62
33 ADS-5.8 BKE	5725 - 5850	88 x 70 x 120	14	127.39
34 AOM-5.8 CE	5725 - 5850	205	5	29.88



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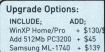
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****POWER 9/10****
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WIRELESS, FM RADIO
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WINDOWS XP PRO
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AND RETURN WARRANTY!

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14.1MBRIGHTE LCD
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DVD DL BURNER
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IEEE1394, BLUETOOTH
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14.1MBRIGHTE LCD
NVIDIA GeForce G7400
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WINDOWS XP PRO
HIGH DEFINITION AUDIO
MODEM, LAN
WIRELESS LAN
IEEE1394, BLUETOOTH
MOTION EYE CAMERA
LIMITED STOCK ONLY!

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\$2299

BENO R31eV08 NOTEBOOK



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1024X768 RESOLUTION
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56K MODEM, DL DVD RW
WINDOWS XP HOME
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\$1075

BENO S52V54 NOTEBOOK



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8X DVD SUPER-MULTI
BLUETOOTH, MODEM
5-IN-1 CARD READER
WINDOWS XP PRO
WIRELESS, 10/100 LAN
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OCZ 1GB / 2GB	\$ 75/149
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ScanSoft PDF Converter V3 Pro	\$135
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Save \$51 off RRP		10-User New Install	\$329



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1-User Pack	\$79	5-User Pack	\$300
3-User Pack	\$195		

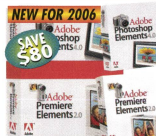
PRICE CRASH



Norton InternetSecurity 2006

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3-User New Install	\$135	10-User New Install	\$340

• Call for Govt. discounts on Adobe/Symantec/Microsoft products



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New Install	\$145
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Photoshop Elements V4 and Premiere Elements V2 Bundled

New Install	\$219
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Standard 2-User (per user)	\$409	Professional 2-User (per user)	\$615
Standard 3-User (per user)	\$369	Professional 3-User (per user)	\$575
Standard Upgrade	\$159	Professional Upgrade	\$250



Adobe Creative Suite V2 Premium	
Up from CreativeSuite	\$935
Up from Adobe Photoshop	\$1275
New Install	\$1899
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Canon Ink Cartridges



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by PC User



Model	Genuine	TONNY
BCI-24BK	\$14.00	\$5.60
BCI-24C	\$33.00	\$7.20

Model	Genuine	TONNY
BX-3	\$49.00	\$28.00
BC-01	\$39.00	---
BC-02	\$39.00	\$28.00
BC-03	\$38.00	\$28.00
BC-05	\$50.00	\$30.00
BC-20	\$49.00	\$28.00
BCI-3eBK	\$25.00	\$ 8.80
BCI-3eC	\$19.00	\$ 6.40
BCI-3eM	\$19.00	\$ 6.40

Model	Genuine	TONNY
BCI-3eY	\$19.00	\$6.40
BCI-3PC	\$19.00	\$6.40
BCI-3PM	\$19.00	\$6.40
BCI-6BK	\$24.00	\$6.40
BCI-6C	\$24.00	\$6.40
BCI-6M	\$24.00	\$6.40
BCI-6Y	\$24.00	\$6.40
BCI-6G	\$24.00	\$6.40
BCI-6R	\$24.00	\$6.40

Model	Genuine	TONNY
BCI-6PC	\$24.00	\$6.40
BCI-6PM	\$24.00	\$6.40
BCI-11BK	\$19.00	\$4.90
BCI-11C	\$34.00	\$7.20
BCI-15BK	\$24.00	\$6.40
BCI-15C	\$44.00	\$7.20
BCI-16C	\$44.00	\$7.20
BCI-21BK	\$13.00	\$4.90
BCI-21C	\$28.00	\$6.40

Epson Ink Cartridges

Model	TONNY	Model	TONNY	Model	TONNY
T001	\$18.90	T0321	\$10.80	T0631/2/3/4	\$7.50
T003	\$ 9.90	T0322	\$ 9.50	S020089	\$9.90
T005	\$18.00	T0323	\$ 9.50	S020093	\$5.10
T007	\$ 9.30	T0324	\$ 9.50	S020097	\$9.00
T008	\$13.00	T0422C/MY	\$ 9.50	S021108	\$6.50
T009	\$15.00	T0461	\$ 8.90	S021110	\$9.50
T013	\$ 4.50	T0472/3/4	\$ 8.90	S021817	\$5.10
T014	\$ 7.90	T0491/2/3	\$ 8.90	S021819	\$6.50
T017	\$ 9.70	T0494/5/6	\$ 8.90	S021911	\$9.00
T018	\$10.60	T0540/1/2	\$ 8.90	S021913	\$9.50
T026	\$ 9.70	T0541/2/3/4	\$ 8.90		
T027	\$12.40	T0547/8/9	\$ 8.90		
T028	\$ 9.70	T0561/2/3/4	\$ 8.90		
T029	\$10.60	T5591/2/3	\$ 8.90		
T038	\$ 9.60	T5594/5/6	\$ 8.90		
T039	\$10.60	T0621	\$ 8.90		



HP Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
51625A	(#25) \$46.00	\$28.00	C6614A	(#20) \$44.00	\$24.00
51626A	(#26) \$46.00	\$28.00	C6615DA	(#15) \$44.00	\$24.00
51629A	(#29) \$46.00	\$28.00	C6625A	(#17) \$48.00	\$30.00
51633MA	(#33) \$41.00	\$32.00	C6656AA	(#56) \$32.00	\$24.00
51645A	(#45) \$46.00	\$24.00	C6657AA	(#57) \$51.00	\$32.00
51649A	(#49) \$48.00	\$28.00	C6658AA	(#58) \$37.00	\$26.00
C1823D	(#23) \$51.00	\$30.00	C8727A	(#27) \$31.00	\$24.00
C4841/2/3/4AA	(#10) \$46.00	\$28.00	C8728AA	(#28) \$35.00	\$26.00
C5010DA	(#14) \$47.00	\$24.00	C8765AA	(#94) \$31.00	\$27.00
C5011DA	(#14) \$35.00	\$26.00	C8767WA	(#96) \$42.00	\$33.00
C6578D	(#78) \$51.00	\$30.00	C9363WA	(#97) \$45.00	\$36.00

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Lexmark Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
12A1970	\$48.00	\$32.00	10N0016	\$46.00	\$36.00
12A1980	\$56.00	\$35.00	10N0026	\$49.00	\$39.00
17G0050	\$46.00	\$32.00	15M0120	(#20) \$53.00	\$41.00
17G0060	\$53.00	\$35.00	18C0031	(#31) \$43.00	\$35.00
13400HC	\$53.00	\$36.00	18C0034	(#34) \$43.00	\$35.00
13619HC	\$52.00	\$38.00	18C0035	(#35) \$45.00	\$37.00
10N0217	\$33.00	---	18L0032	(#82) \$47.00	\$39.00
10N0227	\$35.00	---	18L0042	(#83) \$53.00	\$41.00

Brother Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
LC-21BK	\$30.00	\$7.90	LC-04C/MY	\$16.00	\$7.50
LC-21C/MY	\$17.00	\$7.50	LC-47BK	\$32.00	\$7.90
LC-02BK	\$21.00	\$7.90	LC-47C/MY	\$18.50	\$7.50
LC-02C/MY	\$11.00	\$7.50	LC-800BK	\$32.00	\$7.90
LC-04BK	\$28.00	\$7.90	LC-800C/MY	\$18.50	\$7.50

HP Black Toner Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
92298A	\$139.00	\$ 65.00	C8061X	\$165.00	\$ 85.00
C3906A/F	\$ 95.00	\$ 49.00	Q1338A	\$189.00	\$ 95.00
C3903A	\$120.00	\$ 59.00	Q2612A	\$ 95.00	\$ 59.00
C3909A	\$220.00	\$ 95.00	Q2613A	\$ 95.00	\$ 59.00
C4092A	\$ 87.00	\$ 49.00	Q2613X	\$125.00	\$ 69.00
C4096A	\$135.00	\$ 65.00	Q2610A	\$155.00	\$ 75.00
C4127A	\$145.00	\$ 65.00	Q2624A	\$ 95.00	\$ 59.00
C4127X	\$169.00	\$ 80.00	Q5942A	\$190.00	\$ 95.00
C4129X	\$210.00	\$ 95.00	Q5942X	\$279.00	\$125.00
C4182X	\$239.00	\$135.00	Q5949A	\$ 99.00	\$ 59.00
C7115A	\$ 89.00	\$ 49.00	Q5949X	\$169.00	\$ 75.00
C7115X	\$115.00	\$ 65.00	Q6511A	\$169.00	\$105.00

TONNY Colour Toner Cartridges

Printer Model	Model	Genuine	TONNY
HP LJ1500/2500, Canon LBP2410	C9700A (BK)	\$115.00	\$ 65.00
	C9701/2/3A (CYM)	\$135.00	\$ 79.00
HP LJ4600, Canon LBP2460/2040	C9720A (BK)	\$199.00	\$155.00
	C9721/2/3A (CYM)	\$262.00	\$185.00
HP LJ4500	C4191A (BK)	\$119.00	\$ 59.00
	C4192/3/4A (CMY)	\$165.00	\$ 69.00
HP LJ8000	C4149A (BK)	\$150.00	\$ 89.00
	C4150/1/2A (CMY)	\$225.00	\$155.00
Epson C900/1900	S050100 (BK)	\$ 99.00	\$ 79.00
	S050097/98/99 (CMY)	\$210.00	\$119.00
Epson C1000/C2000	S050033 (BK)	\$119.00	\$ 90.00
	S050034/5/6 (CMY)	\$249.00	\$179.00

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Model	Genuine	TONNY
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ML-1650D8	\$185.00	\$105.00
ML-1710D3	\$ 98.00	\$ 59.00
ML-2150D8	\$185.00	\$140.00
ML-4100D3	\$ 99.00	\$ 83.00
ML-4500D3	\$119.00	\$ 73.00
ML-6060D6	\$155.00	\$ 93.00
SCX-4216D3	\$ 99.00	\$ 79.00
SCX-5312D6	\$ 95.00	\$ 79.00
SF-5100D3	\$ 89.00	\$ 59.00

Brother Toner Cartridges

Model	Genuine	TONNY
TN-100	\$ 29.00	\$23.00
TN-200	\$ 42.00	\$23.00
TN-2025	\$ 74.00	\$59.00
TN-300	\$ 42.00	\$23.00
TN-3060	\$125.00	\$65.00
TN-8000	\$ 43.00	\$23.00
TN-6000	\$ 99.00	\$65.00
TN-7600	\$125.00	\$65.00

Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E210	\$129.00	\$59.00
Optra E310	\$225.00	\$69.00
Optra E/E+	\$135.00	\$59.00
X215	\$105.00	\$59.00

Canon Toner Cartridges

Model	Genuine	TONNY
EP-22	\$ 99.00	\$49.00
EP-25	\$ 99.00	\$49.00
EP-26	\$109.00	\$69.00
EP-32	\$145.00	\$65.00
EP-52	\$185.00	\$80.00
E-31	\$189.00	\$85.00
FX-3	\$132.00	\$59.00
CART303	\$ 83.00	\$59.00

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BCI-24/21C	\$ 5.00
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BCI-6 BK/C/M/Y/PC/PM	\$ 5.00
BC - 02/03/BX-3	\$27.00
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S1629A (#29)	\$ 24.00
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S1649A (#49)	\$ 26.00
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C6614D (#20)	\$ 30.00
C6615D (#15)	\$ 24.00
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HP C7115X / Canon-EP-25	\$ 60	HP Q2613A	\$ 60
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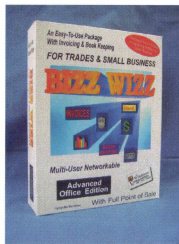
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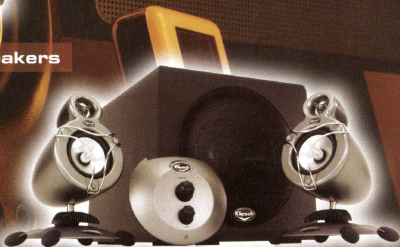
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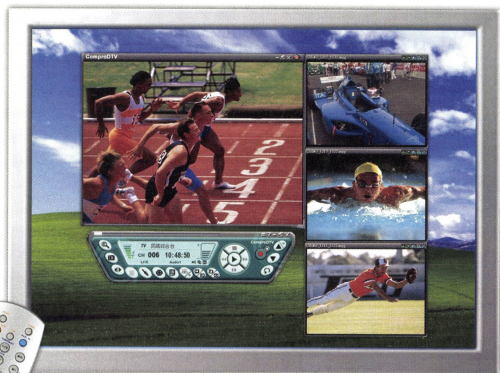
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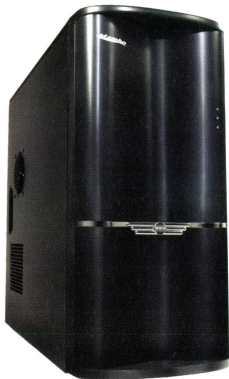
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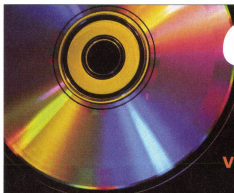
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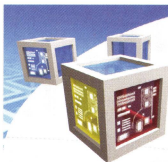
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your business

top 10 reasons
why you should
host with
Server101





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Speed
Security

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Partner Programs
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Spam & Virus Filtering

TELEPHONE LINE SOLUTIONS

Save Money, Improve Efficiency Or Add A Professional Touch To Your Line

TELEPHONE CALL RECORDING FOR ANY APPLICATION

<p>NEW LINE CONNECT model</p> <p>CRU2 is designed to connect directly to ANY telephone extension, to provide High Quality telephone call recording to your PC (PC software provided) or other recording device.</p> <p>Provides automatic operation with start/stop capability from any telephone.</p> 	<p>NEW HANDSET CONNECT model</p> <p>CRU3 is designed to connect to any PABX, COMMANDER, PSTN or VOIP handset. Will then provide High Quality telephone call recording to your PC (PC software provided). Automatic operation with start/stop activation from your PC.</p> 	<p>NEW PROFESSIONAL model</p> <p>CRU4 provides all facilities of the CRU2 Model (it connects to any handset) and in addition allows messages, or previous recordings to be played back to the other party at any time. Allows notes to be tagged to the recording file.</p> 	<p>NEW AUTO DIGITAL ANNOUNCEMENT</p> <p>Our AUTOMATIC ANNOUNCEMENT DEVICE will ANSWER your incoming telephone calls, play an announcement and then resume ringing of your telephones. Ideal for announcing changes of number or that the call will be recorded.</p> 
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TELEPHONE LINE DOOR STATION SOLUTIONS

<p>NEW DOOR STATION UNIT</p> <p>DS2 will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones. Operates on any ordinary single line or multi-line phone system. Requires surface mount or flush mount door phone.</p> 	<p>NEW PABX DOOR STATION UNIT</p> <p>DS4 is designed to be connected to an analogue extension of any PABX. Commander or other multi line telephone system. DS4 goes "off hook" when activated by the door phone. Requires surface mount or flush mount door phone.</p> 	<p>NEW DOOR STATION DIAL OUT</p> <p>Our New DS6 model will RING your telephones and then DIAL OUT to a pre-programmed telephone number if a visitor arrives and you are not home. Requires Surface Mount or Flush Mount Door Phone. Can also connect to a PABX extension.</p> 	<p>NEW DOOR PHONES</p> <p>A range of door phones are available</p> 
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SHARE YOUR LINES AND SAVE INSTALLATION & RENTAL CHARGE

<p>NEW FAXSTREAM DUET SWITCHES</p> <p>Will allow any Fax or Modem device to operate with the Telstra FaxStream Duet system. Provides fully automatic fax reception, just like having a separate line. Two models are available.</p> 	<p>NEW INTELLIGENT FAXSWITCH</p> <p>FAX SWITCH will allow your existing Fax Device to connect to any Single Telephone Line or a Multi-Line (PABX) phone system, to provide for FULLY AUTOMATIC FAX operation. Will operate with all existing telephones and also an Answering machine.</p> 	<p>NEW INTELLIGENT MODEMSWITCH</p> <p>MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.</p> 	<p>NEW EFTPOS SWITCH</p> <p>EFTPOS SWITCH will allow your existing EFTPOS Device to share any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialing, BARGE-IN protection, prevents interference when line is in use. Alternative model will allow operation on 2 lines.</p> 
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MISCELLANEOUS TELEPHONE LINE APPLICATIONS

<p>NEW VOIP SELECTOR</p> <p>This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP. Incoming calls from either line ring on the connected telephones. Outgoing calls are automatically DEFAULTED to ONE LINE, but the alternative line can be selected by DTMF code.</p> 	<p>NEW TWO LINE SELECTOR</p> <p>Premium device will allow you to connect one Telephone Device to two Telephone Lines (Telstra, Optus, VOIP, PABX etc.) Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.</p> 	<p>NEW TELEPHONE CALL TRANSFER</p> <p>Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.</p> 	<p>NEW MULTIPLE NUMBER SWITCH</p> <p>Operate Two numbers on one line. This device will connect your Multiple number calls to one set of phones or answering machine, and your Normal number calls to another set of phones or answering machine.</p> 
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TELEPHONE LINE ON HOLD SOLUTIONS

<p>NEW DIGITAL ON HOLD</p> <p>DMS, Australia's Leading On Hold player, is an MP3 based Message On Hold Device, designed to provide the High Quality and High Reliability that is necessary for all telephone On Hold applications. Easy message change provided by replacing memory card.</p> 	<p>NEW ELECTRONIC MESSAGE UPDATE</p> <p>DMC is available with range of optional Automatic electronic message update methods including Email, Modem FTP and Network IP. We have a National Network of Dealers ready to produce your customized message.</p> 	<p>NEW SINGLE LINE ON HOLD</p> <p>Just plug our MOH Line Sharer into any socket on your single telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional Telephone line On Hold facility for your existing telephones.</p> 	<p>NEW AUTOMATIC CALL ATTENDANT</p> <p>Our single line CALL ATTENDANT will answer your incoming calls after 4, 6 or 8 rings, play a greeting & then put your call on hold until you are able to answer. Also provides Message on Hold facility for your single line.</p> 
--	---	---	---

MISCELLANEOUS TELEPHONE LINE APPLICATIONS

<p>NEW TELEPHONE LINE SIMULATOR</p> <p>THIS TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunication equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.</p> 	<p>NEW RING INDICATOR</p> <p>This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay unit if a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.</p> 	<p>NEW REMOTE TELEPHONE ACTIVATOR</p> <p>Call in to Switch On, Switch OFF or RESET your PC, SERVER or any electrical equipment by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.</p> 	<p>NEW POWER CONTROL UNIT</p> <p>PCU connects directly to the RTA and also to your power socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.</p> 
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DIGITAL AUDIO EQUIPMENT

<p>NEW MESSAGE ON DEMAND</p> <p>MO can be programmed with up to 256 MP3 based messages stored on an MMC/SD card, which can be recalled and played by keypad entry or time programmed sequences.</p> 	<p>NEW TALKING DISPLAY UNIT</p> <p>TDU will play 1 or more pre-recorded messages as soon it is triggered by a movement sensor, a switch, or at a preset time interval. Includes Product Information, Product Information, Message Warnings etc.</p> 	<p>NEW MULTIPLE INPUT UNIT</p> <p>MUI will allow for up to 12 separate movement sensors or switches to be connected to the TDU. Each sensor triggers its own unique message, output via any 8 ohm powered, powered or amplified speaker.</p> 	<p>NEW AUDIO SWITCHING UNIT</p> <p>ASU will allow the TDU to be connected to any existing PA or Background Music system. The existing PA or Background Music system is then muted or faded whenever a TDU message is broadcast and then reconnected when finished.</p> 
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NATIONAL COMMUNICATIONS

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Manufactured in Australia

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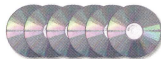
When it comes to communicating are you **STUCK IN THE DARK AGES?**



SEND YOUR MESSAGE... *THE MODERN WAY*

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June 2006

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HOT TAX TIME OFFERS

Desktop + Monitor Bundle

AMD Athlon 64 3200+ processor

1GB RAM & 160GB* hard drive

Dual layer DVD burner



Page 12

\$1389

T7193 | **BONUS FLIGHT[^]**



17" Monitor

Page 7

\$1699

T5013 | **BONUS FLIGHT[^]**



nx6125 Notebook

- Powerful AMD Turion 64 2GHz
- 1GB RAM & 80GB* hard drive
- Dual layer DVD burner
- Wireless LAN



Fly with HP[^]



[^]See page 8 for further details

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Craig Dower
Managing Director

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Lacie 2.5" External
Mobile Hard Drive

ONLINE PRICE

\$185¹ | 40GB | T7240

- Capacity: 40 GB
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- AC adapter free
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Seagate 3.5" External Hard Drive

- USB 2.0 Only

\$239 | 250GB | T7268

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Protect valuable data and digital memories for years to come! These easy to use external drives are a safe and affordable way to protect everything from business files to your treasured digital memories.

- Easy storage and access for large digital music, photo, video, personal data and multimedia files
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- Fast 7200-RPM high-performance drives with a 2MB cache to effortlessly handle large amounts of data
- Whisper-quiet and cool operation
- 1 year warranty covers all parts and labor
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**SanDisk Cruzer Micro
128MB USB 2.0 Drive**

\$39 | P0699

Stylish, clear overmold casing
Brilliant blue LED

Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)

USB Mass Storage Class Device

Compatible with Windows 98SE, ME, 2000, XP and Mac OS 9.1+, OS X v10.1.2+

Certified Windows XP and Mac OS X



HOT OFFER!



HP LaserJet 1022n Printer

ONLINE PRICE

\$499¹ | T7281

- Print Speed: Up to 18ppm, letter (up to 18ppm, A4)
- Resolution: 1200 dpi
- Memory: 8 MB RAM
- Media input: 250 sheet tray
- Duty cycle: 8,000 pages/month
- Network ready

PLUS

get a **BONUS** toner
valued at \$113 **only**
when you order online!

**ONLINE
ONLY!**



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Available capacity of hard drive may be less due to preinstalled software

Acer Travelmate 4072WLMi

\$1599
35928 | Rent*17.92 /pw

- Pentium M 740 1.7GHz
- 512MB DDR2 RAM
- 60GB* Hard Drive
- DVD±RW +Dual Layer Drive
- Wireless LAN 802.11 b/g
- 15.4" Widescreen
- Windows XP Professional



BONUS
Acer
Bag



Targus USB Port Replicator | \$118 | P265
3 yr Harris Technology
Extended Warranty | \$249 | S0601

BEST VALUE



TOSHIBA

\$1045

T6823 | Rent*\$11.71/pw



hp

\$1095

T6324 | Rent*\$12.27/pw

Model	Satellite Pro 100	nx6125
Processor	Intel Celeron M 360	Sempron 3000+
Clock Speed	1.4 GHz	1.8GHz
RAM	256MB DDR2	256MB DDR
Hard Drive	40GB*	40GB*
Screen	15.4" WXGA	15" XGA
Optical Drive	DVD/CD-RW Combo	DVD/CD-RW Combo
Wireless LAN	802.11b/g	
Weight	2.7kg	2.7kg
Operating System	Windows XP Home	Windows XP Home
Warranty	1 year	1 year



512MB RAM | \$86 | T5503
AC Adaptor | \$92 | A8715
Additional Battery | \$196 | T4554
3 yr Harris Technology
Extended Warranty | \$249 | S0601

Air/Auto/AC Adaptor | \$245 | T7172
Docking Station | \$295 | T7178
Travel Battery | \$195 | R6672
3 yr Harris Technology
Extended Warranty | \$249 | S0601

Toshiba Tecra A3X

\$1699

0161 | Rent* \$19.04/pw

Pentium M 740 1.7GHz

512MB DDR2 RAM

60GB* Hard Drive

DVD-SM ±Dual Layer Drive

Wireless LAN 802.11a/b/g

15" Screen

Windows XP Professional

TOSHIBA

Powerful
all-ones

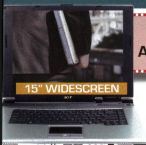
512MB RAM | \$86 | T5503

3 yr Harris Technology

Extended Warranty | \$249 | SO601

HOT
PRICE

BETTER PERFORMANCE



BONUS
Acer Bag



acer

TOSHIBA

hp

\$1299

99858 | Rent* \$14.56/pw

\$1595

T6824 | Rent* \$17.87/pw

\$1749

F7734 | Rent* \$19.60/pw

Travelmate 2434WLCi	Satellite Pro 100	nx6120
Celeron M 370	Core Solo T1300	Pentium M 740
1.5GHz	1.6GHz	1.6GHz
512MB DDR2	512MB DDR2	512MB DDR
60GB*	60GB*	40GB*
15.4" WXGA	15.4" WXGA	15" XGA
DVD±RW +Dual Layer Drive	DVD Super Multi +Dual Layer Drive	DVD±RW +Dual Layer Drive
802.11b/g	802.11a/b/g	802.11b/g
2.8kg	2.7kg	2.8kg
Windows XP Professional	Windows XP Professional	Windows XP Professional
1 year	1 year	1 year
AC Adaptor \$138 T7171	512MB RAM \$86 T5503	Air/Auto/AC Adaptor \$245 T7172
Auto/Air Adaptor \$179 R9566	AC Adaptor \$44 T5957	Docking Station \$295 T7178
Additional Battery \$249 R1647	High Capacity Battery \$213 R4302	Travel Battery \$195 R6672
3 yr Harris Technology	3 yr Harris Technology	3 yr Harris Technology
Extended Warranty \$249 SO601	Extended Warranty \$249 SO601	Extended Warranty \$249 SO601

Notebooks

Cases for 15.4" Notebooks

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\$55 | L24697



Belkin

Belkin NE-07 Notebook Case

\$57 | L4287



BELKIN

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\$81 | 56233



Freemove

Targus Sportsline Backpack

\$98 | Blue | D6300

\$98 | Silver | F0752



Freemove

All in one performance series...

Transport your PC in style
Targus Urban Messenger**\$89**
20391

Targus Urban Top Loader

\$89
20389

Targus Urban Backpack

\$115
68732

Targus Urban Overnight Roller

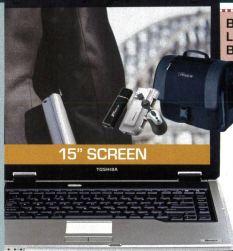
\$179
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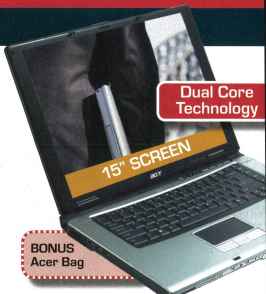
Available capacity of hard drive may be less due to preinstalled software

BONUS Lifestyle Bundle

Tecra A3X

\$2099S7643 | Rent * \$23.52/pw
• Pentium M 750 1.8GHz
• 512MB DDR2 RAM
• 60GB# Hard Drive
• DVD SuperMulti
• Dual Layer Drive
• Wireless LAN 802.11a/b/g
• 15" Screen
• Windows XP Professional**TOSHIBA**

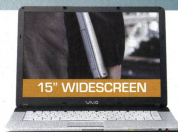
WiFi Windows

**Dual Core Technology****BONUS Acer Bag**

Travelmate 4202LMI

\$1879T5012 | Rent * \$21.06/pw
• Core Duo T2300 1.6GHz
• 512MB DDR2 RAM
• 80GB# Hard Drive
• DVD SuperMulti
• Dual Layer Drive
• Wireless LAN 802.11b/g
• 15" Screen
• Windows XP Professional**acer**

WiFi Windows

GOOD PERFORMANCE**SONY**

WiFi Windows

\$1899

B4026 | Rent * \$21.28/pw

**SONY**

WiFi Windows

\$1999

33786 | Rent * \$22.40/pw

Model	Vaio FS48GP
Processor	Pentium M 740
Clock Speed	1.7GHz
RAM	512MB DDR2
Hard Drive	60GB*
Screen	15.4" WXGA
Optical Drive	DVD±RW+DL
Wireless LAN	802.11b/g
Weight	2.9kg
Operating System	Windows XP Professional
Warranty	1 year

Power! Add-ons

AC Adaptor | \$169 | R7805
Extended Battery | \$599 | S4560
Port Replicator | \$269 | R7035
3 yr Harris Technology
Extended Warranty | \$249 | S0601

Model	Vaio FJ68GP
Processor	Pentium M 750
Clock Speed	1.8GHz
RAM	512MB DDR2
Hard Drive	60GB*
Screen	14.1" WXGA
Optical Drive	DVD±RW+DL
Wireless LAN	802.11b/g
Weight	2.4kg
Operating System	Windows XP Professional
Warranty	1 year

AC Adaptor | \$169 | R7805
Extended Battery | \$599 | S4560
Targus USB Port Replicator | \$119 | P2695
3 yr Harris Technology
Extended Warranty | \$249 | S0601

6125

\$1699

D13 | Rent*19.04/pw

Core i7 64 ML-37 2GHz
8 x 512MB DDR RAM
10GB# Hard Drive
DVD±RW Dual Layer Drive
Wireless LAN 802.11b/g
15" Screen
Windows XP Professional

Powerful
Performance

Docking Station | \$295 | T7178
3 yr Harris Technology
Extended Warranty | \$249 | S0601



FLY WITH HP
(see page 8)

15" SCREEN

**HOT
PRICE**

**Harris Technology
Exclusive
64 bit Processor**

BEST PERFORMANCE



**BONUS
Acer
Bag**



\$1999

T6579 | Rent*\$22.40/pw

Travelmate 4074WLMi

Pentium M 760
2GHz
2 x 512MB DDR2
100GB*
15.4" WXGA
DVD±RW+DL
802.11b/g
2.9kg
Windows XP Professional
1 year



FLY WITH HP
(see page 8)

15.4" WIDESCREEN



\$2295

F7736 | Rent*\$24.52/pw

nx8220

Pentium M 750
1.8GHz
512MB DDR
60GB*
15.4" WXGA
DVD±RW
802.11ba/b/g & Bluetooth
2.6kg
Windows XP Professional
1 year

AC Adaptor | \$138 | T7192
Additional Battery | \$249 | R1647
USB Port Replicator | \$118 | P2695
3 yr Harris Technology
Extended Warranty | \$249 | S0601

Air/Auto/AC Adaptor | \$245 | T7172
Docking Station | \$295 | T7178
Travel Battery | \$195 | R6672
3 yr Harris Technology
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Notebooks

Logitech V20 Notebook Speakers

\$119
S8957



Logitech QuickCam for Notebooks Pro

\$175
T5700



Targus Tablet PC & Notebook Stand

\$35
M9827



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Making Your Mobile Life Easier

Targus Notebook/LCD Monitor Stand

\$35
K1787



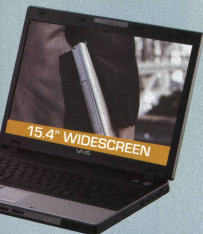
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Performance machines...**Sony Dedicated Business Notebook**

VAIO BX168GP

\$2499

93097 | Rent* \$26.70/pw



SONY

- Pentium M 760 2GHz
- 512MB DDR2 RAM
- 60GB# Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11b/g
- Bluetooth v2.0
- 15.4" WXGA Screen
- Windows XP Professional



Port Replicator | \$449 | 38593
 3 yr Harris Technology
 Extended Warranty | \$299 | S0602

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Available capacity of hard drive may be less due to preinstalled software

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- 2 | Receive a Flight Booking Form from HP within one month
- 3 | Complete the Booking Form and finalise your flight in conjunction with the travel centre

*Promotion: Fly with HP! Purchase this eligible nx Series Notebook or dx Series Desktop from 1/5/06 to 31/7/06 and be eligible for a return flight within Australia.

You must register with HP within 30 days of purchase to redeem a flight. Redemption postage charges apply. HP exclusions and conditions apply. Please see hp.com.au/flyfree for full details. Not available in conjunction with any other offer. Only available while stocks last.

FLY WITH HP[^]**15" SCREEN**

nx6320

\$2399

T6762 | Rent* \$25.63/pw

- Core Duo T2400 1.8GHz
- 512MB DDR2 RAM
- 60GB# Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth
- 15" XGA Screen
- Windows XP Professional

nx6320

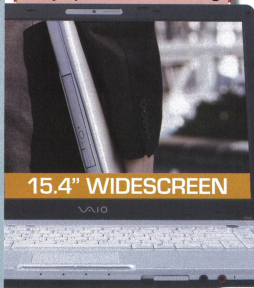
\$2899

T6763 | Rent* \$30.50/pw

- Core Duo T2500 2GHz
- 1GB DDR2 RAM
- 80GB# Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth
- 15" SXGA+ Screen
- Windows XP Professional



Docking Station | \$295 | T7178
 3 yr Harris Technology
 Extended Warranty | \$299 | S0602

BONUS**Sony Optical Mouse & Bag****15.4" WIDESCREEN**

VAIO FE15GP

\$2299

65597 | Rent* \$24.56/pw

- Core Duo T2300
- 512MB DDR2 RAM
- 80GB# Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- 15.4" WXGA Screen
- Windows XP Professional

VAIO FE18GP

\$2799

20375 | Rent* \$29.45/pw

- Core Duo T2400
- 512MB DDR2 RAM
- 100GB# Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- 15.4" WXGA Screen
- Windows XP Professional



AC Adaptor | \$169 | 13283
 Extended Battery | \$599 | 54560
 3 yr Harris Technology Extended Warranty | \$299 | S0602

SONY



60
\$2649

6973 | Rent* \$28.30/pw

Core Duo T2400 1.8GHz
2 x 512MB DDR2 RAM
80GB* Hard Drive
DVD SuperMulti Dual Layer Drive
Wireless LAN 802.11a/b/g
15.4" WXGA Screen
Bluetooth v2.0
Windows XP Professional



15.4" WIDESCREEN

NEW
Available Late June

Powerful Add-ons

• PC Adaptor | \$64 | T6342
• Extended Battery | \$299 | T6415
• Port Replicator | \$319 | T3755
• 3 yr HT Extended Warranty | \$299 | S0602

ecra A7

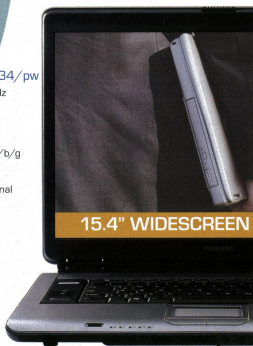
\$2349

8714 | Rent* \$25.09/pw

Core Duo T2300 1.6GHz
512MB DDR2 RAM
80GB* Hard Drive
DVD SuperMulti
Dual Layer Drive
Wireless LAN 802.11a/b/g
Bluetooth v2.0
15.4" WXGA Screen
Windows XP Professional

Powerful Add-ons

• PC Adaptor | \$44 | T5957
• Extended Battery | \$127 | T6419
• Port Replicator | \$275 | T5500
• 3 yr Extended Warranty | \$299 | D0717



15.4" WIDESCREEN

\$2979

A8725 | Rent* \$31.34/pw

• Core Duo T2400 1.8GHz
• 512MB DDR2 RAM
• 100GB* Hard Drive
• DVD SuperMulti
Dual Layer Drive
• Wireless LAN 802.11a/b/g
• Bluetooth v2.0
• 15.4" WXGA+ Screen
• Windows XP Professional

Notebooks

Desktop Replacement Notebooks

Satellite Pro P100

TOSHIBA

\$3299

A7575 | Rent* \$34.71/pw

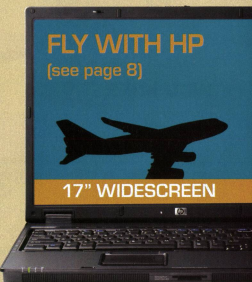


- Core Duo T2400 1.8GHz
- 512MB DDR2 RAM
- 100GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- Wireless LAN 802.11a/b/g
- 17" WSXGA+ Widescreen
- Bluetooth v2.0
- Windows XP Professional

nx9420

\$3999

T6653 | Rent* \$40.82/pw



17" WIDESCREEN

- Core Duo T2500 2GHz
- 1GB DDR2 RAM
- 100GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- Wireless LAN 802.11a/b/g
- 17" WSXGA+ Screen
- Windows XP Professional

Ultra portable series...

Port Replicators

Use your notebook at your desk, with a monitor and all your accessories plugged in, then undock it for travel in a matter of seconds.

For Sony TX Series

\$359 | 38549

For Sony SZ Series

\$369 | T5020

For Toshiba R200 Series

\$385 | T6205

For Toshiba M400

\$275 | T6056

Notebook Mouse

Tired of using a Touchpad or Trackpoint when out of the office? A notebook mouse travels easily and can be used in confined spaces.

MS Wireless Notebook Laser Mouse 6000

\$99 | T0467



web links

MICROSOFT

microsoft.ht.com.au

RENTSMART

rentsmart.ht.com.au

SAMSUNG

samsung.ht.com.au

SONY

sony.ht.com.au

TOSHIBA

toshiba.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

Available capacity of hard drive may be less due to preinstalled software.

POWER

VAIO SZ18GP

\$3699

20464 | Rent* \$38.53/pw

- Core Duo T2400 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- 13.3" WXGA Screen
- Weighs 1.7kg
- Windows XP Professional



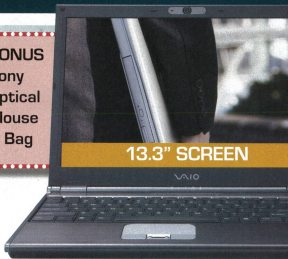
Maxtor 300GB External Hard Drive | \$389 | T5718

3 yr Harris Technology Extended Warranty | \$299 | S0602

SONY



BONUS
Sony
Optical
Mouse
& Bag



FLEXIBILITY



Q35

\$2599

T6976 | Rent* \$27.76/pw

- Core Duo T2400 1.8GHz
- 2 x 256MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti +Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth
- 12.1" WXGA Screen
- Weighs 1.9kg
- Windows XP Professional



Netgear Wireless Router | \$99 | J2416

3 yr Harris Technology Extended Warranty | \$299 | S0602

SAMSUNG



ULTRA LIGHT

Portege R200

\$3299

S9625 | Rent* \$34.71/pw

- Intel Pentium M 753 1.2GHz ULV
- 2 x 256MB DDR RAM
- 60GB* Hard Drive
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- 12.1" XGA Screen
- Weighs 1.3kg
- Windows XP Professional



Maxtor 300GB External Hard Drive | \$389 | T5718

3 yr On Site Warranty | \$274 | H4793

TOSHIBA



Ask us about extended warranty

Notebooks

Tablet PCs
Portage M400



\$3099

T5498 | Rent* \$32.61/pw

- Core Solo T1300 1.6GHz
- 512MB DDR2 RAM
- 60GB* Hard Drive
- 12.1" XGA TFT Screen
- Wireless LAN 802.11a/b/g
- Microsoft Windows XP Tablet Edition

\$3999

T5499 | Rent* \$40.82/pw

- Core Duo T2400 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- 12.1" SXGA+ Screen
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Microsoft Windows XP Tablet Edition

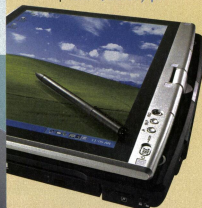
TOSHIBA



Tecra M4

\$3799

T4944 | Rent* \$39.57/pw



- Intel Pentium M 760 2GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- 14.1" SXGA+ Screen
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Microsoft Windows XP Tablet Edition

TOSHIBA



No compromise

IAO SZ15GP
\$2999

T209 | Rent* \$34.55/pw

- Core Duo T2400 1.6GHz
- 12MB DDR2 RAM
- 60GB* Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- 13.3" WXGA Screen
- Weighs 1.9kg
- Windows XP Professional

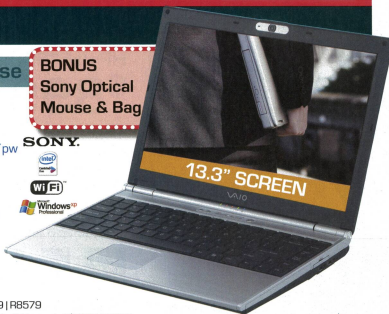
Powerful
Adaptive

Non portable printer | \$399 | R8579

3 yr Harris Technology Extended Warranty | \$299 | S0602

BONUS
Sony Optical
Mouse & Bag

SONY



Performance in a portable package

IAO SZ15GP
\$2899

T5370 | Rent* \$30.50/pw

- Pentium M 753 1.2GHz ULV
- 2 x 256MB DDR RAM
- 60GB* Hard Drive
- DVD±RW Drive
- Wireless LAN 802.11a/b/g
- Bluetooth
- 14.1" WXGA Screen
- Weighs 1.7kg
- Windows XP Professional

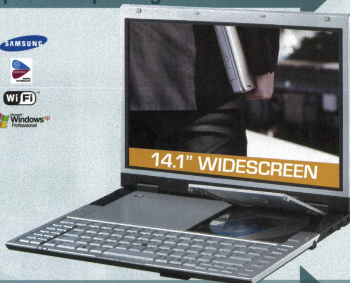
Powerful
Adaptive

Portage 5GB Pocket Hard Drive

\$169 | Q3001

3 yr Harris Technology Extended

Warranty | \$299 | S0602



Carry your notebook anywhere

IAO TX27GPB

\$3699

T3688 | Rent* \$38.53/pw

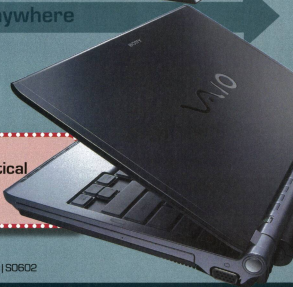
- Pentium M 753 1.2GHz ULV
- 1GB DDR RAM
- 60GB* Hard Drive
- DVD±RW Dual Layer Drive
- Wireless LAN 802.11b/g
- Bluetooth v2.0
- 11.1" WXGA Screen
- Weighs 1.3kg
- Windows XP Professional

Powerful
Adaptive

Sandisk 1GB Flash Drive | \$99 | S2289

3 yr Harris Technology Extended Warranty | \$299 | S0602

SONY



BONUS
Sony Optical
Mouse
& Bag

Desktop deals...

Bonus USB Drive with Kingston Memory!



Receive a **BONUS 256MB USB Flash Drive**, valued at \$56, with all purchases of Kingston Memory (both current and legacy models) to the value of \$550 or more.*

Best Quality

- Lifetime warranty
- 100 % tested

Cost Savings

- Kingston memory is priced less than OEM memory

Industry Leadership

- The world's largest independent memory module manufacturer.

Service Support

- Kingston Care - free comprehensive lifetime support for proprietary server memory.
- Your system warranty remains valid with Kingston memory.

KINGSTON MEMORY CONFIGURATOR

Find the right memory for your system
visit: kingston.ht.com.au

web links

ACER
acer.ht.com.au
HP
hp.ht.com.au
KINGSTON
kingston.ht.com.au
MICROSOFT
microsoft.ht.com.au
RENTSMART
rentsmart.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

RentSmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

Available capacity of hard drive may be less due to preinstalled software

*Bonus only available on purchases \$550 or more between 01/06/2006 - 30/06/2006. Bonus will be shipped directly from Simms International.



HP dx5150 Microtower

\$899

T5212 | Rent* \$10.07/wk

- Processor: Athlon64 3200+
- Memory: 1024MB DDR400 RAM
- Hard Drive: 160GB* SATA (7200RPM)
- Optical Drive: 16 x Dual Layer DVD±RW
- Operating System: Windows XP Professional
- Warranty: 3 years parts/1 year labour

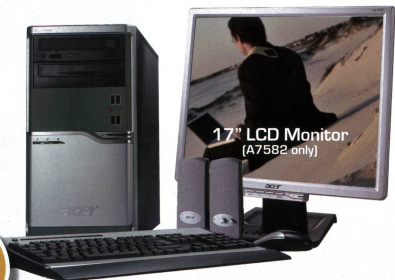


HP dx5150 Microtower & HP L1706 17" Monitor

\$1389

T7193 | Rent* \$15.56/wk

FLY
WITH HP*
(*see page 8)



HOT
PRICE

\$999

T3142 | Rent* \$11.19/wk

\$1099

A7582 | Rent* \$12.31/wk

Model	F5 Microtower
Processor	Intel Pentium 4 519
Clock Speed	3.06 GHz
Ram	1024MB DDR2 SDRAM
Hard Drive	160GB* SATA (7200RPM)
Optical Drive	16x Dual Layer DVD±RW
Operating System	Windows XP Professional
Monitor	Not Included
Warranty	1 Year Limited Onsite



Desktops

Acer Small Business Bundle
\$1699

A7581 | Rent* \$19.04/wk

Bundle includes:
Powerful AcerPower F5 Desktop PC
Acer 17" LCD Monitor
Microsoft Office 2003 Small Business Edition



Harris Technology
EXCLUSIVE

AcerPower F5 features:

- Processor: Intel Pentium 4 524
- Clock Speed: 3.06GHz
- Ram: 1024MB DDR2 SDRAM
- Hard Drive: 160GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD±RW
- Operating System: Windows XP Professional
- Warranty: 1 Year Limited Onsite



AL1716S 17" LCD features:

- Maximum Resolution: 1280x1024
- Interface: Analogue
- Contrast Ratio: 500:1
- Response Time: 12ms
- Warranty: Limited 3 years



Microsoft® SmallBusiness Edition
includes:

- Word 2003
- Excel 2003
- Powerpoint 2003
- Outlook 2003
- Publisher 2003

AcerPower F5 Pentium D
\$1299

T6179 | Rent* \$14.56/wk

- Processor: Intel Pentium D 820 2.8GHz Dual Core
- Memory: 1024MB DDR2-SDRAM
- Hard Drive: 250GB* SATA (7200RPM)
- Optical Drive: 16 x Dual Layer DVD±RW
- Operating System: Windows XP Professional
- Warranty: 1 year limited on-site warranty



Harris Technology
EXCLUSIVE



17" or 19"
LCD Monitor



\$1699

T4602 | Rent* \$19.04/wk

dx7200 Slimtower

Intel Pentium D 820 Dual Core
2.8 GHz
512MB DDR2 SDRAM
80GB* SATA (7200RPM)
DVD/CD-RW Combo
Windows XP Professional
L1706 | 17" LCD

3 year parts / 1 year labour and onsite



\$1799

A7556 | Rent* \$20.16/wk

dx7200 Slimtower

Intel Pentium 4 640
3.2GHz
512MB DDR2 SDRAM
80GB* SATA (7200RPM)
Dual Layer DVD±RW
Windows XP Professional
L1906 | 19" LCD

3 year parts / 1 year labour and onsite



PDA's & accessories...

palmOne Tungsten TX,
T5 Leather Case**\$35** | G3375palmOne Screen
Protectors 12 Pack⁴**\$24** | G3371hp iPAQ hx2000 Series
Koskin Finish Case⁴**\$20** | R9681palmOne Treo 650
Form Fit Leather Case⁴**\$26** | R4251

web links

HP
hp.ht.com.au
 LOGITECH
logitech.ht.com.au
 O2
o2.ht.com.au
 PALM
palm.ht.com.au
 PLANTRONICS
plantronics.ht.com.au
 RENTSMART
rentsmart.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery. Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

⁴ PDA not included⁵ Via redemption from Palm. For more details visit palm.ht.com.au

palm Tungsten TX Colour PDA

\$499 | T0850

With built-in Wi-Fi and Bluetooth[®] technology, the Palm[®] TX handheld is the wireless device you've been waiting for. Browse the web, check email¹, and see everything on a large colour screen. Work on your Word, Excel, and PowerPoint files² - or have some fun and listen to MP3s³. It's anything but business as usual.

- Intel[®] 312MHz processor
- 128MB (100MB actual storage capacity) flash memory
- High-res 320x480 screen, rotates to landscape or portrait
- MultiMediaCard, SD, and SDIO expansion card compatible
- Built-in Wi-Fi and Bluetooth[®] wireless technology
- Palm OS Garnet 5.4
- Audio speaker
- Long-life rechargeable lithium ion

¹ Within wireless service coverage area only. Bluetooth functionality requires compatible Bluetooth device; web and email require data plan and an ISP, all sold separately. Some Wi-Fi hotspots require fee for usage. Microsoft Exchange Server 2003 or VPN may be required.

² PowerPoint support for Macintosh is view only.³ Expansion card required for Macintosh, sold separately. Internet download may be required.

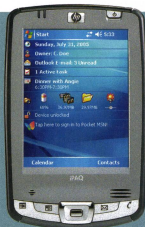
BONUS
 LOGITECH
 WIRELESS
 HEADPHONES⁵



hp iPAQ hx2490 Pocket PC

\$579 | Rent* \$6.49/pw
T3239

- Intel[®] PXA270 520MHz Processor
- 192MB (128MB ROM and 64MB SDRAM) total memory, up to 80MB user available memory
- Display Transflective TFT QVGA, resolution 240 x 320 pixels
- MultiMediaCard, SD, and SDIO expansion card compatible
- Built-in Wi-Fi and Bluetooth 1.2 compliant
- OS Windows Mobile 5.0 Software, Premium Edition



hp iPAQ hx2790 Pocket PC

\$769 | Rent* \$8.61/pw
T0898

- Intel[®] PXA270 624MHz Processor
- 256MB total memory (192MB ROM and 64MB SDRAM) Up to 144MB user available memory
- Display 3.5" Transflective TFT QVGA, portrait and landscape mode
- MultiMediaCard, SD, and SDIO expansion card compatible
- Built-in Wi-Fi, Bluetooth[®] wireless technology, Serial IR
- OS Microsoft[®] Windows Mobile[™] 5.0 software - Premium Edition
- Enhanced security: Biometric fingerprint reader



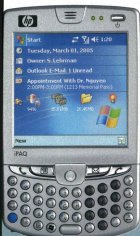
DA Atom Pocket PC

\$1149 | Rent * \$12.87 / pw
| T3407

is sleek piano-black device sets a new benchmark in product design by being the world's first PDA-phone to feature a 2.0 mega pixel camera with a built-in flash and FM radio tuner. Weighing a mere 140 grams and measuring only 58 (W) x 102 (L) x 18.5 (T) mm, the Xda phone has all the features users expect from bigger PDA phones in a small package.

Intel PXA272 416MHz Processor
Flash ROM: 128MB in total, RAM: 64MB
2.7" TFT LCD display with touch panel, 240 x 320 dots resolution
Built-in Wi-Fi and Bluetooth® wireless technology
OS Microsoft® Windows Mobile™ 5.0
Tri-band GSM / GPRS / EDGE: GSM1900, GSM1800, GSM1900
Colour 2 mega pixel CMOS camera
Stereo speaker, mono microphone
Operation time: 150 hours standby, up to 5.5 hours talk time
FM Radio tuner

Wi-Fi  **Bluetooth**



hp iPAQ hw6515 Mobile Messenger

\$849 | Rent * \$9.51 / pw
| C5205

- Intel® PXA270 312MHz Processor
- Up to 55MB user available memory (includes 12MB iPAQ File Store)
- Display Transflective TFT QVGA color
- MultiMediaCard, SD, and SDIO expansion card compatible
- Built-in Bluetooth® wireless technology
- OS Windows Mobile for Pocket PC 2003 (2nd Ed.-Phone Edition)
- GSM / GPRS Quad band GSM / GPRS / EDGE (GSM 850 / 900 / 1800 / 1900 MHz)
- Camera Resolution 1280 x 1024 pixels

 **Bluetooth**

palm Treo 650 Colour SmartPhone

\$929 | Rent * \$10.41 / pw
| R3503

Intel XScale 312MHz Processor
Main Memory: 22MB user accessible RAM
Display 320x320 TFT touch screen
MultiMediaCard, SD, and SDIO expansion card compatible
Built-in Bluetooth® wireless technology
Palm OS Garnet 5.4
Communication: GSM / GPRS / EDGE 850 / 900 / 1800 / 1900 World Phone
Camera: VGA (640x480) with 2x zoom

 **Bluetooth**



**BONUS
LOGITECH
WIRELESS
HEADPHONES***

PDA's

Plantronics Explorer 320 Bluetooth Wireless Headset

\$79
T2466





Logitech Mobile Pro Headset

\$139
R5968





hp Bluetooth Folding Keyboard*

\$150 | Q9596





hp AC Adapter Kit with multi head (AU, UK, EUR, US plugs)

\$50 | R9683

hp iPAQ Auto Adaptor

\$58 | L7189



palmOne Travel Charger Kit for E2, T5, TX, LifeDrive, Treo 650

\$39 | Q3656

palmOne Vehicle Power Charger E2, T5, TX, LifeDrive, Treo 650

\$25 | Q3380



TV tuners, audio & video editing software...



**Bonus
Dvico Aussie
Soccer Ball¹**

Dvico FusionHDTV Nano USB2.0 Tuner²

\$199 | T7086

A tiny USB powered Digital and High Definition TV Tuner

- Decoding and viewing of Digital Terrestrial Television
- USB 2.0 high speed compatible
- Supports all the formats of DVB-T/ Australian AS4933 specification
- Supports DVB-T EPG
- Real Time Digital Video Recording (DVR)
- Scheduled recording
- BDA drivers for 3rd party software
- Supports S/PDIF sound card output for home theatre users
- Recording stream cut-on-the-fly utility
- High resolution still image capture
- HD (MPEG2) to DVD/ MPEG4 (Divx) conversion
- Convertible Aspect Ratio (16:9 or 4:3)
- Automatic and manual channel scan
- USB remote control included
- Time-Shifting
- Support any notebook PC's & desktops

web links

ACER
acer.ht.com.au
DVICO
dvico.ht.com.au
HAUPPAUGE
hauppauge.ht.com.au
NEC
nec.ht.com.au
SONY MEDIA
sonymedia.ht.com.au
RENTSMART
rentsmart.ht.com.au

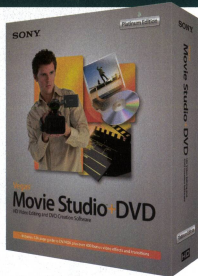
Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/ delivery.

¹Via redemption from Lako Pacific.

²Image for illustration purposes only.

Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Some items are indicated as delivery only. Delivery charges apply. See page 62 for details.



**Sony Vegas Movie Studio
+ DVD 6 Platinum Edition**

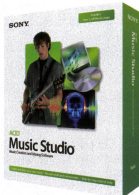
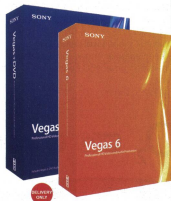
\$219 | S9191

Vegas Movie Studio+DVD Platinum software offers everything you get with the standard version such as easy drag-and-drop video editing, integrated DVD layout and burning, Show Me How interactive tutorials. In addition, Platinum Edition provides added features, advanced editing tools, and other bonus materials to speed you through even the most complex of movie projects — from fullscreen DV to widescreen HDV.

Sony Vegas 6 + DVD Production Suite

\$919 | S0374

The Vegas+DVD Production Suite combines Vegas 6, DVD Architect 3, and Dolby Digital AC-3 encoding software to offer an integrated environment for all phases of video, audio, DVD, and broadcast production. A must for the professional media producer.



Acid Music Studio

\$159 | SB652

It's easy to create and share your own music with ACID[®] Music Studio[™] software. Over 1,700 loops for building original songs, remixes, and soundtracks. Import your own music from CDs and MP3s. Burn disc-at-once or track-at-once CDs, export to popular formats, or publish songs to ACIDplanet.com.

Hauppauge TV Tuners

DigitalVision HD PCI

\$299 | S7332

DigitalVision HD USB2

\$299 | S7333

DigitalVision-HD offers a unique combination of superior picture quality, 2 year warranty and Australian-tested performance. It's all you need to turn your PC into a flexible entertainment powerhouse!

Includes Digital High-Definition TV/ radio receiver, remote control, ShowShifter media centre and driver software and 30 day subscription to icguide; Australian electronic program guide.



Acer LCD TV's implement cutting edge technology for superb picture and sound quality, complemented by enhanced user friendly controls to bring you tomorrow's LCD TV experience today.

Acer 26" Widescreen LCD TV

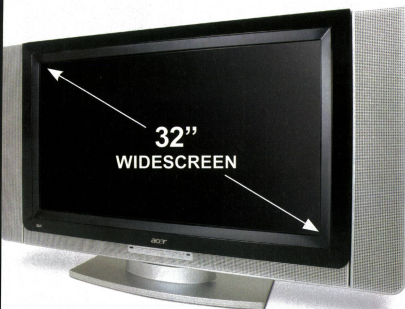
\$1299

NT2671W | Rent* \$14.56/wk

Resolution: 1280 x 768
Brightness: 450 cd/m²
Contrast Ratio: 600:1
Viewing Angle: 170° (Horizontal and Vertical)
Multiple Inputs
Integrated Speakers:
2 x 5W SRS WOW
Teletext subtitle
3 years limited warranty

acer

HOT PRICE



Acer 32" Widescreen LCD TV

\$1799

AT3201W | Rent* \$20.16/wk

acer

- AT3201W: 32" (81cm)
- Resolution: 1366 x 768
- Brightness: 550 cd/m²
- Contrast Ratio: 800:1
- Viewing Angle: 170° (Horizontal and Vertical)
- Multiple Inputs
- Integrated Speakers: 2 x 10W SRS WOW
- Teletext subtitle
- 3 years limited warranty

harris technology 

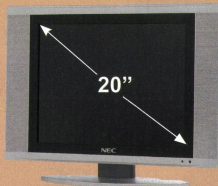
LCD TV & Multimedia

NEC 20" 4:3 LCD TV

NEC

\$929

N0358 | Rent* \$10.41/wk



NEC's new mid size LCD TV NLT-20S features 640x480 aspect ratio. With a built in TV tuner the NLT-20S is a space saving TV that can easily be wall mounted

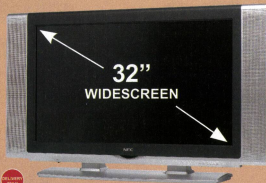
- NLT-20: 20.1" (50.9cm) 4:3 viewing format
- Resolution: 640 x 480
- Brightness: 450 cd/m²
- Contrast Ratio: 400:1
- Digital Television Ready (Via D-sub)
- S-Video, AV & Component (DVD) Input
- Integrated Speakers: 2 x 3W
- 3 year warranty

NEC Widescreen HD 32" LCD TV

NEC

\$2439

T6358 | Rent* \$26.05/wk



NEC's new Digital TV model, NLT-32HD1 offers widescreen 1366x768 resolution with a contrast ratio of 1200:1 for brilliant, clear images making them ideal for todays digital broadcasts. High definition TV tuner included.

- NLT-32: 32" (81cm)
- Brightness: 600 cd/m²
- Built in High Definition Tuner
- HDMI (High Definition Multimedia Interface)
- Integrated Speakers: 2 x 15W
- 3 year warranty

Premium Level Monitors...



NEC 90GX2 - 19" Monitor

\$899 | Rent* \$10.07/wk
| T6791

- Viewable Image Size: 19"
- Interface: Digital & Analogue
- Maximum Resolution: 1280 x 1024
- Contrast Ratio: 700:1
- Response Time: 4ms
- OptiClear screen technology
- Tilt & swivel adjust for viewing comfort
- 3 years limited on-site warranty

NEC

Acer AL2032W - 20" Monitor

\$999 | Rent* \$11.19/wk
| T5748

- Viewable Image Size: 20" Widescreen
- Interface: Analogue, Digital & S-Video
- Maximum Resolution: 1680 x 1050
- Contrast Ratio: 800:1
- Response Time: 8ms
- Auto adjustment of images
- 2 x 5W internal stereo speakers
- 3 year limited warranty

acer



Value Level Monitors - Analogue & Digital...

Samsung 740B - 17" Monitor

\$409

S9253 | Black
S9248 | Silver

- Viewable Image Size: 17"
- Interface: Analogue & Digital
- Maximum Resolution: 1280 x 1024
- Contrast Ratio: 600:1
- Response Time: 8ms
- Height Adjust & Pivot Stand
- 3 year on site exchange & zero dead pixel policy*

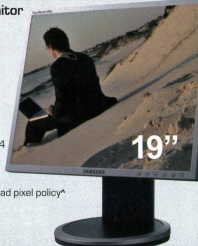


Samsung 940B - 19" Monitor

\$599

Rent* \$6.71/wk
S8307 | Black
S8306 | Silver

- Viewable Image Size: 19"
- Interface: Analogue & Digital
- Maximum Resolution: 1280 x 1024
- Contrast Ratio: 700:1
- Response Time: 8ms
- Height adjust & pivot stand
- 3 year on site exchange & zero dead pixel policy*



Entry Level Monitors - Analogue...

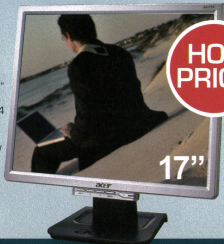
Acer AL1716S - 17" Monitor

\$349

T3247 | Silver

- Viewable Image Size: 17"
- Interface: Analogue
- Resolution: 1280 x 1024
- Contrast Ratio: 500:1
- Response Time: 12ms
- 3 years limited warranty

acer



Samsung 740N - 17" Monitor

\$349

S9509 | Black
S9511 | Silver

- Viewable Image Size: 17"
- Interface: Analogue
- Resolution: 1280 x 1024
- Contrast Ratio: 600:1
- Response Time: 8ms
- 3 year on site exchange warranty*

SAMSUNG



Monitors

Samsung 215TW - 21" Monitor

\$799

Rent* \$8.95/wk

Black/Silver Trim | T5571

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1400x1050
- Contrast Ratio: 600:1
- Response Time: 8ms
- Height adjust, pivot, swivel and tilt stand
- 3 year on site exchange & zero dead pixel policy*



web links

ACER

acer.ht.com.au

NEC

nec.ht.com.au

RENTSMART

rentsmart.ht.com.au

SAMSUNG

samsung.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

*Please contact Samsung Electronics Australia on: 1300 362 603 or email: monitor.service@samsung.com for full terms and conditions.

*Bonus DVD Player via redemption from Samsung. Bonus only for purchases on the 215TW between 01/05/06 to 30/06/06.

For full terms & conditions visit: www.samsung.com.au/215TW

Samsung 215TW - 21" Monitor

\$1099 | Rent* \$12.31/wk
T6656

Viewable Image Size: 21" Widescreen
Interface: Digital, Analogue,
S-Video, Component & Composite
Maximum Resolution: 1680 x 1050
Contrast Ratio: 1000:1
Response Time: 8ms
Integrated speaker & headphone jack
Height Adjust, Pivot and Swivel stand
3 year on site exchange & zero dead pixel policy*

BONUS DVD PLAYER¹



NEC 1970NXP - 19" Monitor

\$639

Rent* \$7.16/wk

T6988 | Black

T6989 | White

- Viewable Image Size: 19"
- Interface: Analogue & Digital
- Maximum Resolution: 1280 x 1024
- Contrast Ratio: 500:1
- Stylish design with silver trim
- XtraView wide-angle viewing
- 3 years limited on-site warranty

NEC



NEC Accusync LCD72V - 17" Monitor

\$369

Q2329 | Black

Q2328 | White

Viewable Image Size: 17"
Interface: Analogue
Resolution: 1280 x 1024
Contrast Ratio: 450:1
Response Time: 16ms
3 years limited on-site warranty



NEC

Projectors...

2C Present-It Portable Free-Standing Projector Screen

\$499 85" screen | S8065

\$539 96" screen | S8066



- Black folded steel casing incorporating tripod legs
- Pull up with adjustable height pole
- Free-standing on floor
- Multi Aspect Ratio

2C See-It Pull-Down Wall/Ceiling Screen

\$299 | 84" screen | S8072

\$399 | 100" screen | S8073



- Manual pull-down
- Matte black case colour
- Ceiling or wall mountable
- Multi Aspect Ratio

web links

ACER
acer.ht.com.au
NEC
nec.ht.com.au
Rentsmart
rentsmart.ht.com.au
SONY
sony.ht.com.au
TOSHIBA
toshiba.ht.com.au
LOGITECH
logitech.ht.com.au

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Some items are indicated as delivery only. Some charges apply. See page 62 for details.

*warranty conditions apply.

NEC - Big Screen Solutions Made to Impress

The VT-48G / VT480G is a user friendly projector with practical integrated functions, making it the perfect choice for those requiring a versatile and portable display solution.



NEC VT-48G

\$999

T3233 | Rent* \$11.19/wk

- LCD Technology
- 1600 ANSI Lumens
- SVGA resolution
- Contrast ratio: 800:1
- Multiple input terminals
- Lamp life 3000 hours
- Compact 2.8kg
- Integrated speaker
- Wall colour correction
- Warranty: 2 years on parts

NEC VT-480G

\$1459

T3738 | Rent* \$16.35/wk

- LCD Technology
- 2000 ANSI Lumens
- SVGA resolution
- Contrast ratio: 800:1
- Multiple input terminals
- Lamp life 2000 hours
- Compact 2.9kg
- Integrated speaker
- Security function
- Warranty: 2 years on parts



Sony VP-ES3 & VP-LEX3

\$1499 | Rent* \$16.80/wk | VP-ES3: SVGA | T5456

\$1999 | Rent* \$22.40/wk | VP-LEX3: XGA | T6937

- 3LCD Technology
- 2000 ANSI Lumens
- SVGA or XGA resolution
- 6 Picture modes
- Multiple input terminals
- Unique user-friendly design
- Lightweight, just 2.9kg
- Quiet operation, as low as 29dB
- Ceiling mountable
- 2 years limited warranty*



Acer PD125D

\$1599

T6740 | Rent* \$17.92/wk

- DLP Technology
- 2000 ANSI Lumens
- XGA resolution
- Contrast ratio: 2000:1
- Multiple input terminals
- DVI connection
- Lamp life 2000 hours
- Compact 2.4kg
- Includes carry case
- Warranty: 2 years on parts

3LCD SONY

acer Delivery Only

Projectors

Toshiba - The Ultimate in Quality and Performance

Perfect for the board room or any mobile professional, the T100/TW100 is a super bright DLP business projector with multiple inputs for impressive presentations every time. The TW100 model includes wireless capabilities for added convenience.



TOSHIBA

Toshiba T100/TW100

\$2999 | Rent* \$31.55/wk
| T100 | T6346

T100/TW100 features:

- DLP Technology
- XGA resolution
- Impressive brightness: 2600 ANSI Lumens
- Includes remote with laser pointer and carry case
- 4 Inputs for easy media switching via remote
- User logo and security password settings
- Blackboard mode allows projection onto coloured walls

\$3499 | Rent* \$36.45/wk
| TW100 | T6348

TW100 Additional features:

- 802.11b/g Wireless projection with audio
- Auto focus and power zoom for easy set-up
- USB Memory Key presentation capability

Delivery
Only

[TW100]

QUALITY ASSURANCE WARRANTY ON ALL TOSHIBA PROJECTORS:

- 3 year parts and labour
- 90 day lamp and faulty product replacement



NEC LT-25G

\$2199

T4004 | Rent* \$24.64/wk

- DLP Technology
- 2200 ANSI Lumens
- XGA resolution
- Contrast ratio: 1500:1
- Lamp life 2000 hours
- Integrated speaker
- Auto focus function
- Direct power off function
- Ultra Compact 2kg
- Warranty: 2 years on parts

NEC



Sony VPLCX20

\$2399

S7487 | Rent* \$25.63/wk

- 3LCD Technology
- 2000 ANSI Lumens
- XGA resolution
- Slim (52mm) and stylish design
- Advanced intelligent auto set-up
- Multiple inputs
- Power zoom and focus
- Security password authentication system
- Remote control and carry case supplied
- 2 years limited warranty

3LCD

SONY

Toshiba Compact P8 Projector



\$2559 **TOSHIBA**

T3878 | Rent* \$27.34/wk

Ultimate Portability Only 1kg

Featuring XGA resolution, a high contrast ratio of 2100:1 and easy set up functions, the TDP-P8 is the perfect portable projector solution at only 1kg.

- DLP Technology
- XGA resolution
- Ultra portable: only 1kg
- High contrast ratio: 2100:1
- Brightness: 1500 ANSI Lumens
- Auto-Image setup
- Digital keystone correction
- Includes mouse remote with laser
- Eco mode: reduces operating noise and extends lamp life
- 3 year warranty with 90 day lamp & faulty product replacement period

Logitech Cordless 2.4 GHz Presenter

\$119 | S8331



Logitech

- LCD Timer
- Intuitive Controls
- Integrated Laser Pointer
- Extended 50-foot range
- Battery life of up to six months
- LCD battery status indicator
- Plug and Play

Memory Cards, USB + Pocket Drives...




SanDisk CompactFlash Card

	\$35	256MB D5310
	\$45	512MB J0492
	\$75	1GB E8511

SanDisk Secure Digital Card

	\$30	256MB G3995
	\$40	512MB M3944
	\$70	1GB N7731

SanDisk Ultra II Secure Digital Plus Cards

	\$125	1GB R9401
	\$245	2GB T6646

SanDisk Pro Duo Memory Stick

\$55	512MB Q4276
\$95	1GB R3311
\$165	2GB S5848



SanDisk miniSD Cards

\$45	512MB R0508
\$75	1GB R9345



Seagate 5GB Pocket Hard Drive USB 2.0

\$139 | Q3001

- Small Size, Large Capacity, High Performance
- Perfect for your on the go lifestyle
- Built-in, retractable USB 2.0 cable
- Powered by your computer, so you don't need a power supply
- Hot pluggable USB 2.0 interface enables data transfer up to 480 Mbps
- 3600rpm drive with 2MB cache delivers the high performance you need

Seagate 

HOT PRICE



LaCie 8GB Carte Orange USB 2.0 Key

\$249 | T3091

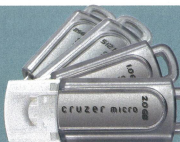
- Compact, rugged metal design
- True plug & play convenience
- Integrated Hi-Speed USB 2.0 cable
- No need for power-supply or adapter
- No need for power-sharing cable
- Driver-free for Windows 2000/XP and Mac OS



SanDisk Cruzer Micro

\$35	256MB P0698	\$99	1GB S2289
\$57	512MB P0699	\$169	2GB S2290

- Stylish, clear overmold casing
- Brilliant blue LED
- Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)
- USB Mass Storage Class Device
- Certified Windows XP and Mac OS X



SanDisk Cruzer Titanium

\$122	1GB S2291
\$208	2GB S2292

- New stylish Liquidmetal body
- Crush force exceeds 2000 lbs
- Laser etched graphics and finish
- Retractable USB connector
- Distinctive Blue LED
- Hi-Speed USB 2.0 certified
- Certified Windows XP and Mac OS X

SanDisk Cruzer Profile

\$79	512MB T2401
\$129	1GB T2402

- Distinctive ergonomic design for easy access and swiping
- Write speed (minimum) = 5.0MB/Sec
- Read speed (minimum) = 8.0MB/Sec
- Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)
- USB Mass Storage Class Device
- Compatible with Windows 2000 and XP

Biometric USB!



Portable Hard Drives...

Maxtor OneTouch III 2.5" External Hard Drive

Maxtor

\$199 | 60GB | T6327


\$299 | 100GB | T6328

NEW



Weighs less than 227 grams
Ideal backup and storage for carrying your digital portfolio with you
Maxtor OneTouch button—the easy way to make backup copies of your files
USB bus-powered - no additional power cords needed
Two levels of security with Maxtor DriveLock and Encryption to safeguard against unauthorised use
Automatic Synchronisation of data between two or more computers
Simple Maxtor user-interface for drive management, security and automated backup scheduling
System Rollback—rolls back your PC settings to a better point in time while keeping data current
Rubber non-slip side grips

Seagate 2.5" External Hard Drive

Seagate 

\$215 | 40GB | R3680

\$349 | 100GB | R3682



Designed for today's mobile world.
Enjoy easy storage and access of large digital music, photos, video, data and multimedia files both on the desk and on the go.

5400 RPM
2MB cache (40GB)
5000 Gs non-pearting shock resistance
Whisper quiet: less than 23 acoustic decibels
Horizontal dimensions: 1" D x 3.7" W x 5" H
Weight: 292 grams

LaCie 2.5" External Hard Drive

\$229 | 80GB | S2450

HOT PRICE



Made with a durable exterior to withstand life on the go, this stylish, compact drive lets you safely travel with your data, including MP3s, audio tracks and photos. Since this portable drive is USB bus-powered, no cumbersome AC adapter is required.

Hi-Speed USB 2.0 interface
5400 rpm
Plug and play - preformatted for immediate use
1 Year Limited Warranty

LACIE

Storage

Belkin Highspeed USB 2.0 4 Hub

\$59 | M3731



- Offers stackable, reversible design
- Features four 480 Mbps ports, Transfers your data at up to 480 Mbps
- Prevents damage to your computer and devices with over-current protection

Belkin USB 2.0 7 Port Hub

\$79
Black/Silver | M3000/T0584



- Installs easily with Plug-and-Play convenience
- Works seamlessly with all your USB 1.1 and USB 2.0 devices
- Lower power consumption for longer battery life

web links

LACIE
lacie.ht.com.au
MAXTOR
maxtor.ht.com.au
SANDISK
sandisk.ht.com.au
SEAGATE
seagate.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

Desktop Drives...



LaCie d2 Extreme

\$359

250GB | S9066

- Firewire and USB 2.0
- 7200 RPM, 8MB cache
- Slim, aluminum design

LaCie BigDisk

\$499

500GB | T3460

- Powerful Hi-Speed USB 2.0 hard drive
- Plug & play to easily back up multiple workstations
- Unique ultra-quiet, heat-dissipating design

LaCie BiggerDisk Extreme

\$1119

1TB | S8584 | Rent* \$12.54/wk

- FireWire 800, FireWire 400 & Hi-speed USB 2.0
- Built-in RAID for Extreme FireWire 800 speed
- Ideal for audio/video & backing up multiple workstations

web links

DLINK
dlink.ht.com.au
LACIE
lacie.ht.com.au
LINKSYS
linksys.ht.com.au
MAXTOR
maxtor.ht.com.au
NETGEAR
netgear.ht.com.au
RENTSMART
rentsmart.ht.com.au
SEAGATE
seagate.ht.com.au

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*Hard drives must be purchased separately.

Maxtor Basics

\$99

100GB | T5755

\$199

200GB | T5757

\$287

300GB | T5758

Your work, your photos, your songs, your digital video, your memories. Store them all safely and securely in the Maxtor Personal Storage 3200 external hard drive. Ideal for the home and office, it's simple to install— just plug in the USB cable and your Personal Storage solution automatically appears as another drive on your computer. Perfect for the Home PC or laptop user who needs extra storage in a hurry.

- Easy add-on storage for home or office
- Easy installation
- Compact design includes stand for vertical orientation
- USB 2.0 and 1.1 compatibility
- Up to 480Mb/sec data transfer rate
- Up to 300GB capacities

FROM
\$99

Maxtor One Touch III Turbo

\$789

| Rent* \$8.84/wk

| 600GB | RAID 0 only | T4612

\$1199

| Rent* \$13.43/wk

| 1000GB | RAID 0/1 | T4613



The Maxtor OneTouch Turbo solution designed for creative professionals. The Turbo Edition RAID solution brings high performance throughput for high quality video editing without dropping frames or automatic mirroring as an additional safeguard.

- User-configurable RAID solution. Use RAID 0 for high performance disk striping or RAID 1 for automatic mirroring
- FireWire 800 for fast data transfer
- Maxtor DriveLock™ protects contents of drive in case of loss or unauthorised use

Maxtor One Touch III

\$229

| 100GB | T5880

\$289

| 200GB | T5719

\$389

| 300GB | T5718

\$589

| 500GB | T5881 | Rent* \$6.60/wk

- FireWire 400 and USB 2.0
- Simple Maxtor user-interface for drive management, security and backup scheduling
- Creates historical backup versions with full system and file restore to a point in time
- Data synchronisation between 2 or more computers



Seagate External Hard Drive

\$309

200GB | R3677

\$379

300GB | T5581

\$509

400GB | R3679

- Firewire and USB 2.0
- 7200 RPM, 8MB cache
- Pushbutton backup
- Built-in self monitoring technology for data safety and drive performance
- Blue activity lights

Seagate

3 WAYS TO SHOP CALL
CLICK VISIT

harristechnology



Storage

Link AirPlus Xtreme G
108 Mbps Wireless
Storage Router



D-Link
Creating Smarter Networks

\$179 | T0648

DI-624S

- Wirelessly share broadband Internet connection
- 802.11g, 802.11b compatible
- Advanced firewall & parental control

Netgear Storage Central



NETGEAR

\$192 | 34265

SC101

- Share files easily with everyone on the network, while keeping your personal files private
- Easy upgradeability through IDE drives¹

Linksys Network Storage Link for USB 2.0 Disk Drives

\$164 | PB510



NSLU2

- Connects USB 1.1 or 2.0 disk drives and flash disks directly to your network
- Share music, video, or data files with managed access by user name or group
- Integrated file server - access your files from the internet
- Built-in disk utilities - format, backup and scandisk

LINKSYS
A Division of Cisco Systems, Inc.

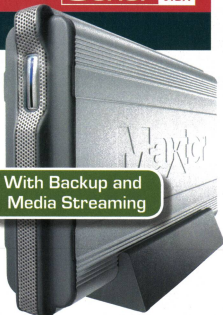
Network Drives...

Maxtor Ethernet Shared Storage Plus

\$485 | 300GB | Q1270

\$669 | 500GB | T4611 | Rent* \$7.49/wk

With Backup and Media Streaming



Maxtor

Shared Storage and Backup For Small Office and Home networks

2 USB ports let you add shared network printers or external storage

Access files from multiple PCs simultaneously

You can set access privileges and keep selected folders private

With Maxtor exclusive Drag and Sort™ technology, you can instantly organise files by dragging them from your desktop PC to the Maxtor Shared Storage Drive. SimpleView™ provides quick backup and storage status. Plays back digital photos, music and video to networked home entertainment system.

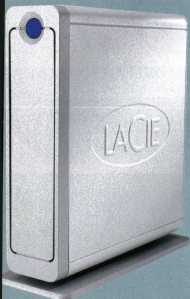
1 year warranty

LaCie d2 Ethernet Disc Mini

\$429 | 250GB | S5488

Designed for small office and home office users. Plug in the user-friendly Ethernet Disk mini and instantly share documents, important data or photos from any networked computer. Connect the Ethernet Disk mini through USB for use as a personal storage device. A web-based administration tool allows for simple settings of share levels and permissions to control user access to files. The original, sturdy metal design can be stackable or rack mountable and is easily portable for shuttling data between home and office.

- Fast Ethernet 10/100 & Hi-Speed USB 2.0 interface
- File sharing on the network
- Secure storage solution
- Designed for Windows®, Mac® and Linux systems



LaCie Ethernet Disk Gigabit

\$1699 | Rent* \$19.04/wk | 1000GB | S8196

\$2799 | Rent* \$29.45/wk | 2000GB | T0500



Add more storage space to your office's network with this easy-to-use, stand-alone online storage device powered by Windows XP

Embedded, which now comes with a Gigabit Ethernet interface and four Hi-Speed USB 2.0 ports for capacity expansion or backup scheduling on external hard drives.

- Access control: share levels, groups and user privileges
- Windows, Mac, Linux and Unix compatible



Call 1300 13 9999 | Click ht.com.au | Visit our stores

Optical Drives...

Verbatim

DVD-R Dual Layer 8.5GB
2-4x Media 3 Pack Jewel

\$17

T3376



CD Storage Box 60 Capacity

\$9

P6824



CD Carry Case 48 CD Capacity

\$12

79584



DVD Video Trim case 25 Pack

\$10

T4864



web links

VERBATIM
verbatim.ht.com.au
PIONEER
pioneer.ht.com.au
RENTSMART
rentsmart.ht.com.au
SONY
sony.ht.com.au
SAMSUNG
samsung.ht.com.au
LACIE
lacie.ht.com.au
REGION 4
region4.ht.com.au

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Internal

Pioneer Super Multi DVD Writer

\$99

Black | T6352

Pioneer

\$99

Beige | T6353

The DVR-A11XL high speed DVD burner introduced by Pioneer enables computer users to create personal DVD movies, make digital photo slideshows, burn music CDs and back up your data files onto DVD-R, -RW, +R, +RW and RAM discs with ease. It also works with dual layer discs, increasing the capacity of a disc from 4.7 to 8.5 gigabytes for even more storage space. Available in Black and Beige.

Write speed:

- DVD-R 16x, 12x, 8x, 6x, 4x, 2x, 1x
- DVD-RW 6x, 4x, 2x, 1x
- DVD-R DL 8x, 6x, 4x, 2x
- DVD+R 16x, 12x, 8x, 6x, 4x, 2.4x
- DVD+RW 8x, 6x, 4x, 2.4x
- DVD+R DL 8x, 6x, 4x, 2.4x
- DVD-RAM 5x, 3x, 2x
- 8cm DVD-R/-RW, DVD+R/-RW with Adapter 2x, 1x
- CD-R 40x, 32x, 24x, 16x, 10x
- CD-RW 32x, 24x, 20x, 16x, 10x, 4x



Sony DRU820A Dual Layer DVD±R/-RW 16x Drive

\$109

| T7133

SONY

- Ultra-Fast 16X max Double Layer/Dual Format DVD Burner
- Back up your computer, make music discs, and more.
- Works with 4.7GB DVD-R/DVD+R/DVD-RW/DVD+RW and 8.5GB DL DVD+R/-R Discs.
- 2MB Buffer Memory
- Includes Nero 6 SE Software Suite



External

Sony DRX810UL Ext Dual-Layer
16x DVD±R/-RW Drive

\$235

| T3332

SONY

- Windows® and Macintosh® Compatible
- Ultra-Fast 16X max Double Layer/Dual Format DVD Burner
- Back up your computer, make music discs, and more.



Samsung External DVD±RW
16x4x5x USB2.0

\$169

| T6007

SAMSUNG

- Interface: USB 2.0
- Double Layer: DVD+R 5X(8.5GB), DVD-R 4X(9.4GB)
- Nero or Pinnacle software is bundled in the retail box



LaCie DL Lightscribe
16x DVD±R/-RW P5 Casing

\$179

| T3116

- DVD-RW and DVD+RW formats
- Double layer technology
- Hi-Speed USB 2.0
- Sleek, stylish design by F.A. Porsche



LACIE

LaCie d2 DL SuperDrive Lightscribe
16x DVD±R/-RW

\$229

| T3124

- Interface: USB 2.0 and Firewire
- DVD drive Lightscribe DVD±R16x/-DVD±RW6x/-DVD+R DL8x/-DVD-R DL4x/-CD-R48x/-CD-RW32x



Need installation? Call us today for assistance

CD / DVD Production...

Evocept CopyBlast Tower Burn 3 Drive

\$999 | Rent* \$11.19/wk
| T4713



RENTAL ONLY

New Standalone Disc Duplication Towers
DVD/CD and CD versions available
Pro DVD version includes 160GB hard drive
for faster burns and storage of commonly
used masters
Up to 16x DVD with dual layer support
Test, copy and verify functions all supported

Evocept CopyBlast Auto Burn 3 Drive

\$4299 | Rent* \$43.88/wk
| T6744



RENTAL ONLY

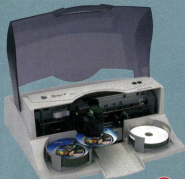
Combining the fast throughput and value for money of
an Evocept CopyBlast Tower Duplicator with the added
convenience of automation - no more manual loading and
unloading of drives!
• 3 16x/DL DVD drives
• 80GB Hard Drive
• 200 Disc Capacity
• Standalone - no PC required
• Easy to use 2 Button LCD interface
• Throughput, per hr for full 4.7GB DVDs - 3 Drive - 21 DVDs.

evocept 

evocept 

Bravo II Duplicate Print

\$4099 | Rent* \$41.84/wk
| N2215



RENTAL ONLY

DVD±R DRIVE
• All-in-one desktop disc publishing system
• One burning drive & 480dpi printer
• 25 disc capacity standard (50 disc
capacity using optional kiosk mode kit)
• Autoprinter only also available
• PC and Mac compatible

Rimage DTP 2000i Publisher

\$6699 | Rent* \$59.63/wk
| N2213



RENTAL ONLY

2 DVD±R Drive
• Totally automated and hands free
• 2 DVD/CD Drives, 100 Disc Capacity
• Incorporates 480i disc printer
• Duplication and Publishing capability
• Network software supports PC or Mac clients
• Up to 2 units on one PC

 RIMAGE

Storage

Verbatim

CD-R 52x 700MB/80Min
LightScribe 30 Spindle

\$23

T4678



Verbatim DVD+RW 4.7GB 4x - 30
Pack Spindle

\$35

T4574



Verbatim DVD+R/-R 4.7GB 16x
White InkJet Printable 50 Spindle

\$36

T4573/T4157



Verbatim DVD-R 4.7GB 8x
Thermal Printable Wh-Wide 50 Spindle

\$37

G3397



Verbatim CD-R 52x 700MB/80Min
IJ Printable Silver 50 Spindle

\$20

G6490



Verbatim CD-R 52x 700MB/80Min IJ
Printable White - 50 Pack Spin

\$20

T7011



Verbatim DVD+R DL 8.5GB 2.4x White IJ
Printable 20 Spindle

\$96

S8528



For your imaging needs...

IXUS 750

\$685

S9168 | Rent* \$7.67/wk

Canon
advanced simplicity



The **compact** digital camera offering high resolution quality and sophisticated style.

- 7.1 Megapixel
- Canon 3x optical zoom lens
- Huge 2.5 inch LCD screen
- Super fast DIGIC II Imaging Processor
- Print/Share Button allows easy 'one push' printing of images straight from the camera

web links

CANON

canon.ht.com.au

EPSON

epson.ht.com.au

HP

hp.ht.com.au

KODAK

kodak.ht.com.au

OLYMPUS

olympus.ht.com.au

RENTSMART

rentsmart.ht.com.au

SONY

sony.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

* Available from 01/06/06 until 30/06/06 or while stocks last. Bundled with printer.

Olympus 720SW 7.1 megapixels

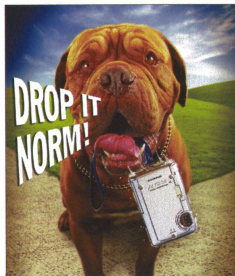
\$589

T6639 | Rent* \$6.60/wk

The new Tough 720SW is the latest innovation. Olympus prides itself on it's revolutionary technology and cutting edge sleek designs. Olympus has gone that one step better, taking digital photography to an entire new level with the introduction of the World's First Shockproof and Waterproof digital camera, the Tough 720SW.



- Precision Optics
- 3.0x Optical Zoom
- Water Proof (3m)
- 2.5" LCD Screen
- Shock Proof (1.5m)
- 19.1 MB Internal Memory
- 7.1 Megapixels



precision optics

OLYMPUS

DSCW505 Silver

\$489 | T6010



- 6.0 Mega pixels, 3 x Optical Zoom
- High Sensitivity - ISO 1000 and Clear RAW NR Image Processing
- Get up to 390 shots using supplied Lithium-Ion (NPBG1) battery per charge!
- Large 2.5" LCD, MPEG Movie VX Fine, 16:9 Image Recording, 32MB Internal Memory

Also available in black.

SONY

CyberShot DSC775

\$639 | Rent* \$7.16/wk
S2337



- 5.1 megapixels
- Zoom: 3x optical
- 6 x Precision Digital
- Carl Zeiss Vario Tessar Lens
- 2.5 inch Clear Photo LCD screen
- PictBridge Direct Print Compatible
- Manual, scene and burst modes
- MPEG Movie VX Fine with Sound
- 32Mb Memory Stick DUO Supplied
- USB 2.0

SONY

IXUS Wireless

\$699 | Rent* \$7.83/wk
T5597

Wireless



- 5.0 Megapixel
- Canon 3x optical zoom lens
- Large 2.0 inch LCD screen
- Super fast DIGIC II Imaging Processor
- Wireless direct printing and image transfer
- Wireless Print Adapter WA-1E included as standard allows simple wireless PictBridge printing straight from the box

Canon
advanced simplicity

IXUS 800is

\$784 | Rent* \$8.78/wk
T7159

NEW



- 6.0 Megapixel
- Canon 4x optical zoom lens with Optical Image Stabilizer
- Huge 2.5 inch LCD screen

Canon
advanced simplicity

Visit ht.com.au for a full range of products

Digital Cameras

Canon
advanced simplicity

Powershot A620

\$549 | S9188



- 7.1 Megapixel
- Canon 4x optical zoom lens
- Vari-angle 2" inch LCD screen
- Super fast DIGIC II Imaging Processor
- Print/Share Button allows easy 'one push' printing of images straight from the camera



Scanjet 2400

\$98 | K7999

1200 dpi optical resolution
Up to 1200 x 1200 dpi
hardware resolution
48 bit colour
Charged coupled device
[CCD]
Preview mode: up to 14
seconds

Scanjet 4850

\$325 | T3132

- Up to 4800 dpi optical resolution
- Up to 4800 x 9600 dpi hardware resolution
- Built-in transparent material adaptor - up to 4 slides of 6 negatives
- Charged coupled device [CCD]
- Preview mode: up to 6 seconds

Scanjet 5590

\$915 | Rent* \$10.25/wk
N8512

- 2400 dpi optical resolution
- 2400 x 2400 dpi hardware resolution
- 48 bit colour
- Transparent material adaptor
- Duplex scanning with 50 page ADF

Canoscan LiDe 500F

\$229 | R7447



2400 x 4800 dpi optical resolution and 48-bit colour depth
Space saving three-way design with built-in stand
USB powered
Four one-touch buttons Scan/Copy/PDF/E-mail
FARE Level 3 technology
Scans 35mm film

Canon
advanced simplicity

Perfection 3490

\$229 | S8279



- 3,200 x 6,400 dpi optical resolution and 48-bit colour depth
- Built-in Integrated Transparency Unit for 35mm strip x 4 frames strip 35mm slide x 3 frames
- For Macintosh and Windows
- Comprehensive software suite included

EPSON
EXCEED YOUR VISION

Canoscan 8400F

\$329 | Q3558

Canon
advanced simplicity



3200 dpi Hyper CCD sensor with 48-bit colour depth
Preview scans in only 2.1 seconds
Versatile film scanning up to 12 frames of 35mm filmstrip, 4 x 35mm slides plus medium format film up to 6 x 22 cm
Fast data transfer with USB 2.0 Hi-Speed interface
Automatic dust, scratch, fading, graininess and backlight correction technology [FARE Level 3] for film scanning

i40 Scanner

\$1145 | Rent* \$12.83/wk
Q6075

Kodak

- High speed 25ppm / 50ipm duplex scanning capability
- 50 page automatic document feeder
- Perfect Page Scanning with i-thresholding for outstanding image quality
- Bundled with Kodak Capture Software "Lite" version



JUNE BONUS
\$30
Myer voucher¹



OLYMPUS

E500 Digital SLR Camera single lens kit

\$1199 | Rent* \$13.43/wk
T7143



Compact, World's Lightest Weight of 435g

- High - picture quality 8 Megapixels
- Exclusive Dust Reduction system
- 2.5" Hyper crystal LCD screen
- 100% Digital Interchangeable Lens SLR
- 4/3 type full frame Transfer CCD
- Lens: 175-45mm

Also available:
Wide Twin Lens Kit/T7153/*1499

MP3 Players and Accessories...

iTunes Music Cards

**\$20**

T0782 | \$20 Credit

\$50

T0783 | \$50 Credit

\$100

T0784 | \$100 Credit

Give an iTunes Music Card to the music lovers in your life and let them re-discover old favourites or keep up with the hottest hits. With the prepaid card, they can purchase songs from the #1 music download store and listen to them anywhere with iPod or on their computers with iTunes for Mac or Windows.

- Redeem iTunes prepaid cards:
- Download iTunes for Mac or Windows at www.itunes.com
- Open iTunes and click Music Store
- Click Prepaid Cards
- Enter the code printed on the attached card when requested
- Download your songs. Enjoy!

web links

Apple
apple.ht.com.au
Belkin
belkin.ht.com.au
Logitech
logitech.ht.com.au
Samsung
samsung.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

*iPod not included

Samsung YP-Z5 series MP3 Players

\$299 | 2GB White/Black | T6777/T6775

Imagine listening more... with an amazing 35 hours battery. Imagine hearing more... with WMA subscription support and storage for up to 1000 songs# (on 2GB).

Imagine seeing more... with choice of wallpaper and photo slideshows on a stunning 1.8" screen.

Imagine feeling more... with DnSe 3D surround sound and a durable, brushed aluminium case.

Features:

- Super long 35 hour battery
- Durable aluminium casing
- Large 1.8" 262,000 colour screen
- Sort music by artist, album, playlist
- Photo wallpaper and slideshow
- DnSe Digital Natural Sound Engine with Street Mode
- Subscription service ready

Capacity will vary according to format, song length and bit rate



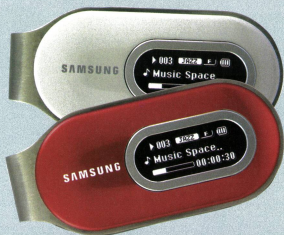
Samsung YP-F1 Series MP3 Players

\$199 | 1GB | S9195

The YP-F1 with its fashionable design lets you wear the player as a necklace or just clip it anywhere on to your clothing. Change covers to be different, whenever you want [Samsung provides three face plates included in standard packaging].

Features:

- USB 2.0 capability
- FM radio and FM record
- Voice recording
- Up to 10 hours playback time
- Approximately 480 songs in WMA format or 240 songs in MP3 format (for 1GB model)



Samsung YP-U2 series MP3 players

\$119 | 512MB Black | T6767**\$169** | 1GB White | T6771

FM Radio, Voice Recording and DnSe 3D Sound

Features:

- Full sized USB connection
- Blue light effect
- DnSe Digital Natural Sound Engine with Street Mode
- 13 hours battery time
- USB 2.0
- Can be used as a mass storage device
- Plug and play compatible

**SAMSUNG**

Ask us about extended warranty

Accessories

Logitech mm22 Portable Speakers¹⁰

\$89 | R8876



BELKIN

Belkin TuneFM Transmitter
For iPod Nano¹⁰

\$89
White/Black
T7117/T7118

NEW



Belkin Protective Overlays For iPod Nano¹⁰

\$19 | T7112

NEW



Belkin iPod Nano Leather
Carabiner Case¹⁰

\$40
White/Black
T3943/T3915



Belkin Kickstand Case For 5G iPod¹⁰

\$40
White/Black
T4175/T4477



Apple iPod Video

\$449 | 30GB White/Black | T1569/T1576

\$598 | 60GB White/Black | T1577/T1578

First, iPod put music in your pocket. Now it puts on a show. With up to 150 hours of video² and support for up to 15,000 songs⁴ on a 2.5" 320 x 240 pixel TFT QVGA colour display, iPod gives you the ultimate music experience — sight and sound — in a lighter, thinner design. Available in classic white and dramatic black.

- Up to 20 hours of battery life¹
- Holds up to 25,000 photos²
- Holds up to 150 hours of video²
- For Mac and Windows

Up to 20 hours of battery life refers to 60GB model and music playback. Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Battery life and number of charge cycles vary by use and settings. See www.apple.com.au/batteries for more information.

²Photo capacity is based on iPod-viewable photos transferred from iTunes. Video capacity is based on 4 minutes per H264 750Kbps video combined with 128Kbps audio.

¹Song capacity is based on four minutes per song and 128Kbps AAC encoding.

Apple iPod Nano

\$219 | 1GB White/Black | T5713/T5714

\$299 | 2GB White/Black | S9613/S9614

\$359 | 4GB White/Black | S9616/S9615

- Up to 1,000 songs³ or 25,000 photos²
- Just 0.27" thin and 1.5 ounces
- Vivid, backlit color display
- Up to 14 hours of battery life¹
- For Mac and Windows

³Music capacity is based on 4 minutes per song and 128Kbps AAC encoding. 1,000 song capacity refers to 4GB Nano model. 1GB = 1 billion bytes; actual formatted capacity less.

²Photo capacity is based on iPodviewable photos transferred from iTunes.

¹Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Battery life and number of charge cycles vary by use and settings. See www.apple.com/batteries for more information.

Apple iPod Shuffle

\$99 | 512MB | R6116

\$149 | 1GB | R6118

Your music is never the same experience twice with iPod shuffle. The Shuffle setting lets you listen to your favorite songs in different combinations every time. Smaller and lighter than a pack of gum, iPod shuffle is a stylish, wearable, go everywhere musical companion. It fits in the smallest of pockets and plays for up to 12 hours on a single charge.² iPod shuffle comes in 120 song and 240 song capacities³. It's the easiest and most affordable way to mix up your music collection on the go.

²Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Battery life and number of charge cycles vary by use and settings. See www.apple.com/batteries for more information.

³Music capacity is based on 4 minutes per song and 128Kbps AAC encoding.



**Authorised
Solutions Reseller**



PC Input and Webcams...

Verbatim Premium Deluxe Headset with Microphone

\$18 | C2303

Verbatim

Plantronics Audio™ 310 Multimedia PC Headset

\$24 | T7101

NEW

PLANTRONICS

Logitech Internet Chat Headset

\$35 | H8683

Logitech

Plantronics Audio340 Behind-the-Head Enhanced Multi Media Headset

\$44 | T7104

NEW

PLANTRONICS

web links

BELKIN
belkin.ht.com.au
LOGITECH
logitech.ht.com.au
MICROSOFT
microsoft.ht.com.au
PLANTRONICS
plantronics.ht.com.au
TARGUS
targus.ht.com.au
VERBATIM
verbatim.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

Microsoft Comfort Curve Keyboard 2000

\$39 | T0464

- Spill-Resistant Design
- Ultra-Thin Profile Keys
- Comfort Curve Keyboard Layout
- Access the internet more easily



Microsoft

Logitech Cordless Desktop EX-110

\$65 | S8949

- Enjoy the freedom and precision of an 800 dpi optical mouse
- One-touch controls that make music, Internet, and other frequent functions simpler
- Superb quality and value



Logitech

Belkin 3 Button Optical Scroll Wheel Mouse

\$19 | G7758

- Navigate with Plug-and-Play, optical precision
- Two programmable buttons customise frequently used commands
- Scroll wheel provides eight-directional scrolling
- Optical technology provides precision tracking on any surface



BELKIN

Microsoft Wireless Optical Mouse 3000

\$67 | K8218

- Scroll horizontally as well as vertically through documents
- Longer battery life
- Ergonomic designed comfort for either hand
- 3 programmable buttons for your convenience



Microsoft

Logitech X-230 2.1 Speaker System

\$80 | P3348

- Volume and subwoofer controls
- Headphone jack for private listening
- Total power output 32 watts RMS
- Satellite power output 6 watts RMS per channel
- Subwoofer power output 20 watts RMS



Logitech

Logitech X-530 5.1 Speaker System

\$140 | P3349

- Master volume & subwoofer controls
- Headphone jack for private listening
- Total power output 70 watts RMS
- Satellite power output 45W RMS including 15.5W centre



Service and knowledge by IT professionals

**Microsoft Wireless Optical
Desktop 4000**

\$129 | P2085

Zoom in for a closer look at photos and easily enlarge and edit details with the new Magnifier. Scroll from side to side for easier navigation with the included wireless mouse. Tilt Wheel Technology. Three Times Longer Battery Life.



**Logitech Cordless Desktop
MX 5000 Bluetooth Laser**

\$246 | T3579

- Unique LCD keyboard display lets you instantly navigate media playlists or online radio stations etc
- Advanced Bluetooth wireless capabilities
- Touch-sensitive media controls
- Set it up quickly and easily



Logitech V400 Laser Notebook Mouse

\$87 | T6436

Boundless mobility with an All-Terrain Laser sensor that tracks on most surfaces and interference-free 2.4 GHz digital cordless technology that offers five times stronger connections. Rugged design for use anywhere.



Logitech MX-610 Cordless Laser Mouse

\$99 | S8955

- Advanced laser tracking to work flawlessly on surfaces
- Automatic power management turns mouse on/off in sync with the PC, alerts users when batteries are low
- 2.4 GHz digital cordless technology delivers a high level of reliability



Logitech QuickCam Pro 5000

\$142 | T3585

- 640x480 VGA sensor for crisp images
- RightLight™ technology provides natural video images in virtually any lighting condition
- Clean, echo-free audio with RightSound™ technology
- Take up to 1.3 Megapixel photos



**Logitech
QuickCam Fusion**

\$179 | T3586

- Monitor front design provides improved eye-to-eye contact
- Provides true 1.3 mega-pixel sensor quality
- High quality audio via a builtin microphone
- Available 1.1 or 2.0 USB port



Accessories

**Logitech Premium USB
Headset 350**

\$75 | R7934



Plantronics DSP-400 USB Foldable Headset

\$129 | L3282



PLANTRONICS

Targus Wireless Multimedia Presenter

\$149 | P5884



TARGUS
Making Your Mobile Life Easier™

Targus Wireless 2.4GHz Presenter

\$99 | T3495



TARGUS
Making Your Mobile Life Easier™

KVMs & Servers

web links

BELKIN
belkin.ht.com.au
D-LINK
dlink.ht.com.au
HP
hp.ht.com.au
RENTSMART
rentsmart.ht.com.au
SERVERLINK
serverlink.ht.com.au

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Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Some items are indicated as delivery only. Delivery charges apply. See page 62 for details.

SERVERLINK

PS/2 & USB

Elite 8 Port PS2/VGA KVM

\$469 | N6589

Delivery Only

Elite 16 Port PS2/VGA KVM

\$599 | Rent* \$6.71/wk | N8989

Delivery Only

Elite 8 Port KVM inc 8 x 2m PS2/VGA cables

\$587 | Rent* \$6.57/wk | P2748

Elite 16 Port KVM inc 16 x 2m PS2/VGA cables

\$749 | Rent* \$8.39/wk | P2749

Elite 2m High Density KVM Cable - PS2/VGA

\$29 | Q1289

Delivery Only

Elite 10m High Density KVM Cable - PS2/VGA

\$99 | Q1291

Delivery Only

2m High Density KVM Cable - USB/VGA

\$29 | T3828

Delivery Only

5m High Density KVM Cable - USB/VGA

\$59 | T4274

Delivery Only

2 Port star cable - PS/2 & USB

\$79 | Q5541

2 Port star cable - PS/2

\$73 | Q5539

2 Port star cable - USB

\$83 | Q5540

IP Remote Access Device

\$774

Delivery Only

Q5544 | Rent* \$8.67/wk

The ServerLink KVM Console drawers are designed for applications where space is at a premium or CRT displays are undesirable. With a 15" or 17" TFT LCD screen, keyboard, touchpad and integrated KVM switch housed in an industry standard 19" 1U-height rack drawer, these LCD KVM switches save you up to 1/3 of valuable rack cabinet space.

\$1999**\$2399****\$2799****\$2299****\$2699****\$3099**

Part No.	H2100	S6917	S6919	P2058	S6920	S6922
Rent	Rent* \$22.40/wk	Rent* \$25.63/wk	Rent* \$29.45/wk	Rent* \$24.56/wk	Rent* \$28.83/wk	Rent* \$32.61/wk
Model	LKS-101H	LKS-801C	LKS-1601C	LKS-1017H	LKS-8017C	LKS-16017C
Ports	1	8	16	1	8	16
LCD size	15"	15"	15"	17"	17"	17"
KVM Platform support	N/A	PS/2 & USB	PS/2 & USB	N/A	PS/2 & USB	PS/2 & USB
Maximum resolution	1024 x 768	1024 x 768	1024 x 768	1280 x 1024	1280 x 1024	1280 x 1024



All of these products above are for delivery only. Delivery charges apply. See page 62 for details.

**ProLiant ML310 Small Business Server
Premium Bundle**

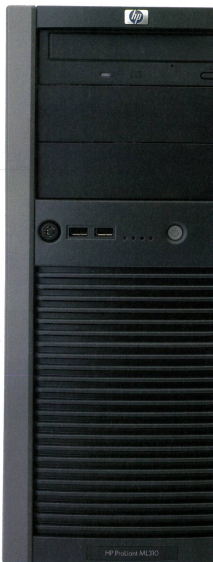
\$2295

T4161 | Rent* \$24.52/wk



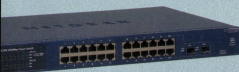
An affordable, single-processor tower server for remote offices and growing business. Ideal for 1-24 users.

- Intel Pentium 4 640 [3.2GHz/800]
- 2GB [2X1GB] PC2-4200 533MHz unbuffered DDR2 SDRAM Memory with Advanced ECC capabilities
- Integrated four port SATA controller with integrated SATA RAID 0, 1
- Integrated 2 x 80GB Hot Plug SATA 7,200rpm Universal Hard Drive
- Embedded NC320i PCI Express 10/100/1000T Gigabit Network Adapter
- 48x IDE (ATAPI) CD-ROM Drive
- 4 Expansion Slots: 2 PCI-X 64-bit/100MHz, 2 PCI Express
- Integrated Lights-Out 2 (iLO 2) Standard Management on system board.
- SU Tower Form Factor (with optional Tower to Rack conversion kit)
- Microsoft Windows SBS 2003 Premium Edition (including 5 CALs)
- Warranty: 3 years parts / 1 year labour / 1 year limited onsite

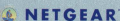


GS724T 24 port Gigabit Smart Switch

\$839 | Rent* \$9.40/wk
N3147



- 24 non-blocking 10/100/1000 Mbps ports
- 2 SFP GBIC slots for fiber connectivity options
- Smart Management features for trunking, VLANs and traffic prioritisation
- Easy browser based switch management
- Rack mountable



DGS-1224T 24 Port Switch and CA Business Protection

\$997 | Rent* \$11.17/wk
T6683



- 24 copper gigabit ports
- 2 combo SFP slots for flexible fiber connection
- Port trunks for aggregated bandwidths
- VLANs for enhanced security and performance
- Managed Switch via Web Interface
- 48Gbps Switching Capacity
- 8,000 MAC Address Table
- 10/100/1000 Mbps Migration
- Includes CA Business Protection



Networking



HP UPS T750 USB

\$510 | S8585



- Nominal input voltage settings: 230V
- Frequency: 50/60 Hz
- Simple USB connection
- Surge suppression: High Energy 6500A peak
- Back up power to 750 VA/500 watts power rating
- Communications: USB and Serial Ports: Standard communication port
- Free HP Power Management software for intelligent manageability

HP DAT 72 USB External Tape Drive

\$1188

T3491 | Rent* \$13.31/wk



- Native USB 2.0 Interface
- 72GB Compressed, 36GB Native capacity
- 11GB/hour Backup Performance
- HP StorageWorks One Button Disaster Recovery (OBDR)
- Reliable industry standard DDS technology
- Small, half-height form factor and choice of models
- 1 x DAT 72 Tape Cartridge
- 1 X Cleaning Cartridge

HP Microsoft SBS Additional 5-Cal User Pack

\$740



S1365 | Rent* \$8.29/wk

- Include a new Remote Web Workplace, for remote users that provides access to e-mail, remote desktops & server management capabilities for Administrators

SOHO Series UPS serial and USB

\$249 | M0848

- Earths AC power through 6 surge-protected sockets, 3 of which provide battery backup.
- System management & shutdown software included
- Safeguards telecommunications with RJ11 ports for your telephone, fax or modem.
- Includes insulated pins for your safety.



ADSL/Broadband/Wireless...



DSL-502T ADSL/ADSL-2
Router with USB/Ethernet Port



\$85 | R6714

DSL-504T ADSL/ADSL-2
Router with 4 Ports



\$108 | S1493



DG834 ADSL Modem router
with 4 Port 10/100 switch



\$108 | L2610

RangeMax DG834PN Modem
Router ADSL 2/+ 108 Mbps



\$289 | T0680

web links

D-LINK
dlink.ht.com.au
LINKSYS
linksys.ht.com.au
NETCOMM
netcomm.ht.com.au
NETGEAR
netgear.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

WPNT511 RangeMax 240 Wireless Notebook Adaptor

\$189 | 08964

WPNT834 RangeMax 240 Wireless Router

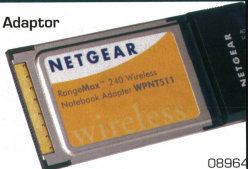
\$259 | 13689

RangeMax 240 is an innovation in wireless technology, delivering wireless speeds of up to 240 Mbps - as fast as wired Ethernet. RangeMax 240 uses an advanced MIMO (Multi-In, Multi-Out) technology to transmit multiple streams of data in a single wireless channel.

Ultimate speed and coverage make dead spots a thing of the past, even in large homes with thick walls and multiple floors. With RangeMax 240, wireless is finally as fast as wired.



NETGEAR



08964



13689

NB8W ADSL2+ PerformaPlus Modem/Router
Wireless 4 Port

\$239 | T4118

Part of NetComm's high-end PerformaPlus series of Internet hardware.

- ADSL2+ modem, 4 port GoS router, 11g (54 Mbps) Wireless Access Point and a Console port for advanced diagnostics
- SPI Firewall and WEP/WPA Wireless Security
- Layer 3 Quality of Service (GoS) router makes it ideal for use with VoIP and other processor-intensive Internet applications at the same time



NetComm

NP285 Turbo HomePlug - Ethernet Over Power Adapter

\$279 | T3595

- Create a local area network or share broadband using your power points
- Faster HomePlug standard - up to 85 Mbps
- A great way to connect gaming consoles to the Internet
- Backward compatible with 14 Mbps HomePlug

NetComm



DWL-925 54 Mbps Wireless Desktop Kit (contains DI-524 + DWL-G510)

\$127 | T6963

DWL-923 54 Mbps Notebook Kit (contains DI-524 + DWL-G630)

\$127 | T6962

The D-Link AirPlus G DI-524 Wireless Router is capable of transferring data with a maximum wireless signal rate of up to 54 Mbps in the 2.4GHz frequency - the same wireless frequency as 802.11b. The D-Link DI-524 Wireless Router also offers 4 Ethernet ports to support multiple computers.

D-Link
Building Networks for People

DG834G 54 Mbps 5-in-1 ADSL Modem Router

\$166 | L2609

The Netgear DG834G is a 5-in-1 product - ADSL modem, router, 4 port 10/100 Ethernet switch, 802.11g 54 Mbps wireless access point and SPI/NAT Firewall

Up to 5X faster than 802.11b
True Firewall with Stateful Packet Inspection (SPI) & Intrusion Control,
Denial of Service (DoS), Virtual Private Network (VPN) pass-through
Smart Wizard detects/connects to your ISP
Works with both 802.11g & 802.11b

NETGEAR

Note: Netgear DG834G is not MAC compatible

WRT54G Wireless G Broadband Router + 4 Ports

\$124 | H9739

All-in-one Internet-sharing Router; 4 port Switch, and Wireless G (draft 802.11g) Access Point
Wireless data rates up to 54 Mbps - 5 times faster than Wireless B (802.11b)
Advanced wireless security with 128-bit WEP encryption, MAC or IP address filtering
3 year Limited Warranty

LINKSYS
A Division of Cisco Systems, Inc.

WUSB54G All-in-One USB Network Adapter and Wi-Fi Finder

\$139 | T5537

- High-speed Wireless G networking for your desktop or notebook computer
- Built-in Wi-Fi finder detects Wireless G and Wireless B signals
- Easy to read display shows network name, channel, signal strength, and security on/off
- Wireless communications are protected by up to 128-bit WEP or WAP encryption

LINKSYS
A Division of Cisco Systems, Inc.

Networking

D-Link
Building Networks for People

DWL-G520 108 Mbps Wireless G PCI Adapter

\$79 | H9622

DWL-G650 108 Mbps Wireless G Notebook Adapter

\$79 | H9621

DWL-G132 108 Mbps XtremeG Wireless G USB Adapter

\$93 | S7919

DWL-G510 54 Mbps Wireless G PCI Adapter

\$45 | S0663

DWL-G630 54 Mbps Wireless G Notebook Adapter

\$48 | S1164

DWL-G122 54 Mbps Wireless G Portable USB Adapter

\$59 | P3058

NETGEAR

WGR614 54 Mbps Wireless G Router + 4 Ports

\$99 | J2416

WG111 54 Mbps Wireless G USB Adapter

\$49 | N6536

WG511 54 Mbps Wireless G Notebook Adapter

\$46 | H9581

Switches...

LINKSYS®
A Division of Cisco Systems, Inc.

SRW224G4 24 port fast Ethernet switch with WebView

\$499 | T4761 DELIVERY ONLY



- Optimised for growing businesses with 4 expandable gig ports
- Secure management via SSH/SSL and secure user control via 802.1x & Mac filtering

SRW248G4 48 port fast Ethernet switch with WebView

\$899 DELIVERY ONLY

T5539 | Rent* \$10.07/wk

SRW224P 24 port fast Ethernet switch with POE

\$899 DELIVERY ONLY

T5542 | Rent* \$10.07/wk

SRW2048 48 port fast Ethernet switch

\$1699 DELIVERY ONLY

T5544 | Rent* \$19.04/wk

web links

D-LINK
dlink.ht.com.au
LINKSYS
linksys.ht.com.au
NETGEAR
netgear.ht.com.au
RENTSMART
rentsmart.ht.com.au

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RentSmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Some items are indicated as delivery only. Some charges apply see page 62 for details.

GS716T Gigabit Smart switch

\$528 | S7139

- 16 10/100/1000 Mbps gigabit ports
- Easy, browser-based switch management
- 2 Small Form-factor Pluggable (SFP) GBIC slots
- Non-blocking bandwidth
- Rack mountable

NETGEAR™



FS728TSAU ProSAFE Stackable Smart Switch

\$629 | Rent* \$7.05/wk
T4681

- 24 10/100 Mbps ports
- 4 10/100/1000 Mbps copper gigabit ports
- Smart Switch software with new advanced features
- Stacking via the built-in gigabit ports
- 2 Small Form-factor Pluggable (SFP) GBIC slots

NETGEAR™



FS726TPAU FProSAFE Smart Switch with PoE

\$671 | Rent* \$7.52/wk
S7039

- 24 10/100 Mbps ports
- 2 10/100/1000 Mbps copper gigabit ports
- Browser-based simple switch management
- 2 SFP GBIC slots for optional fiber connectivity
- Rack mountable

NETGEAR™



DES-1226G Gigabit Smart Switch

\$449 | N9093



- 24 x 10/100 Mbps Fast Ethernet ports for workstations
- 2 x Combo 1000BASE-T/SFP [Mini GBIC] for flexible Gigabit connection
- Auto MDI/MDIX cross over for all twisted-pair ports
- 802.3x Flow Control for protection against data loss
- Port trunks for server/network backbone attachments
- 10/100 Mbps Smart Switch
- Port-based VLAN support to enhance security/network performance
- 802.1p Priority Queues, port-based QoS
- Standard rack-mount size

D-Link
Building Networks for People

DES-1250G Fast Ethernet WebSmart Switch

\$829 | Rent* \$9.29/wk
R3532



- 48 x 10/100BASE-TX Ethernet ports for workstations
- 2 x Combo 1000BASE-T/SFP [Mini GBIC] for flexible copper/fibre Gigabit connection
- Auto MDI/MDIX cross over for all twisted-pair ports
- 802.3x Flow Control for protection against data loss
- Port mirroring for traffic monitoring
- Port trunks for server/network backbone attachments
- Port-based QoS
- 802.1Q VLAN to enhance security/network performance
- 13.6Gbps Switching capacity
- VLAN Link Aggregation Priority Queues
- 10/100/1000Base-T or Fibre Media Support via SFPs for uplinks

Networking



RP614 WebSafe Cable/DSL Router & 4 Port Switch

\$76 | F9645



- Unique Smart Wizard and Install Assistant make setup a breeze
- Lightning fast cable/DSL Internet sharing with integrated 4 port switch
- NAT Firewall with VPN pass-through

FVS124G ProSafe VPN Firewall 25 Router

\$358 | S7022



- 2 x 10/100 WAN interfaces provide load balancing or failover protection
- 4x auto-sensing Gigabit LAN switch ports provide high-speed links for servers and PCs
- Bundled with ProSafe VPN client software single user licence

FVS338 ProSafe VPN Firewall 50 Router

\$335 | R0166



- Initiates up to 50 Hardware-Based VPN tunnels
- Advanced security using Stateful Packet Inspection (SPI) firewall Denial of Service (DoS) Protection and Intrusion Detection

WG102 ProSafe Wireless G Access Point

\$225 | Q0634

- High-speed IEEE 802.11g, up to 108 Mbps in turbo mode
- Wi-Fi Protected Access (WPA) - 802.11i-ready security



GS608 Unmanaged Gigabit switch

\$153 | P0189

8 10/100/1000 Mbps Ethernet ports
Smart - honors 802.1p priority tags, great for VoIP applications
Flexible - great for PC or Macintosh computers
Silent - noise-free operation for a peaceful work environment



DGS-1005D Un-Managed Gigabit Switch

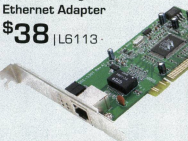
\$79 | K8301

1 Gbps Switching Capacity
Desktop or Wall-Mount Design
Non-blocking Architecture



DGE-530T Gigabit PCI Ethernet Adapter

\$38 | L6113



DGS-1008D Un-Managed Gigabit Switch

\$169 | K8853

8 port 10/100/1000 Mbps Gigabit Switch
16 Gbps switching capacity
Increase the speed of your network server
Move large, bandwidth-intensive files faster



DGE-660TD Gigabit PCMCIA Notebook Ethernet Adapter

\$70 | R7482



DES-1005D Desktop 5 Port Switch

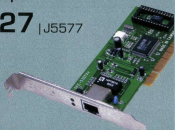
\$46 | 85101

5 x 10/100 Mbps RJ-45 ports
Auto-Negotiation
Auto-Senses Cable Type (Auto-MDIX)
Half/Full Duplex Support



DFE-528TX PCI Ethernet Adapter

\$27 | J5577



DES-1008D Desktop 8 Port Switch

\$62 | 98254

8 x 10/100 Mbps Auto-sensing on all ports
Up to 200 Mbps per port
All ports support half/full-duplex



DFE-690TXD PCMCIA Notebook Ethernet Adapter

\$65 | E7047



Wireless/VoIP solutions...

V25 VoIP/Skype Headset

\$25 | T4123



- Stylish and comfortable headset with built-in microphone
- Connects to the speaker and microphone ports on your sound card
- Separate adjustable volume and microphone on/off switch

NP560 200mW Wireless Booster

\$199 | T3411

Delivery Only



- Add more power to your wireless network for greater range and speed
- Simply connect to any wireless router or access point with a detachable aerial

NetComm®

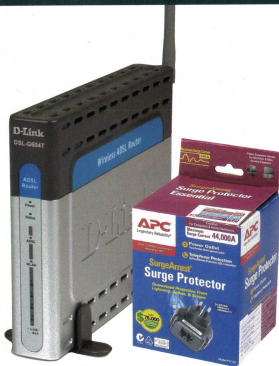
web links

D-LINK
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ENGIN
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LINKSYS
linksys.ht.com.au
NETCOMM
netcomm.ht.com.au
NETGEAR
netgear.ht.com.au

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1 \$50 cashback via redemption from engine. See engin.ht.com.au for more details.



DSL-G604T Wireless G Modem/Router with APC surge protector

\$159 | T3967

- ADSL2+/2+ modem/router with 54 Mbps wireless and built-in 4 port switch
- Integrated ADSL modem with 4 port fast Ethernet 10/100 Mbps switch and integrated 802.11g WLAN access point
- Built-in SPI Firewall, DHCP Server
- 4 port Fast Ethernet & 802.11g wireless connectivity
- Supports WPA Security
- Secure NAT/DHCP Functions
- Supports all major ISPs
- 3 Years Warranty

Plus APC surge protector.

D-Link
Building Networks for People

NB9W Wireless MyNet Gateway

\$249 | T3138

- All your broadband Internet needs in one device
- Features ADSL2+ modem, 4 port GoS router, 2x FXS (VoIP) ports, 1 x FXD line port for landline telephone backup and 11g (54Mbps) Wireless Access Point in one box!
- Layer 3 Quality of Service (GoS) router ensures high quality VoIP calls
- Web-based configuration for your choice of broadband and VoIP Service Providers

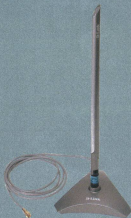


NetComm

Indoor 5dBi Gain Omni-Direct

\$66 | S7909

Delivery Only



This antenna provides high transmission/reception rates for wireless LAN devices operating on the 2.4GHz public industrial, scientific and medical (ISM) frequency band. It can be used with 802.11b and 802.11g wireless LAN devices such as access points and remote routers. This antenna can be used to replace the default antenna of your wireless device to expand its operation range. It can be connected to your wireless device through an extension cable (provided with the antenna), or directly attached to your wireless device.

- 5dBi Gain omni-directional antenna
- Compliant with 2.4GHz ISM band
- For indoors use with 802.11b/g wireless devices
- Extends and expands wireless networking environment range to 360 degree coverage in open space and office environment

D-Link
Building Networks for People

3 WAYS TO CALL
SHOP VISIT

harristechnology



Networking



**10c untimed,
anytime, anywhere
to any landline
phone across
Australia.**

engin Softphone Starter - Single Pack

\$995 |T4180



Engin starter pack includes 2hrs free talk-time at our international rate of 3.5c per minute, earpiece with inbuilt microphone and CD containing the softphone software. Simply install it onto your Laptop or PC and take your phone service with you anywhere you have a broadband connection. For *9.95 per month you get engin to engin free calls and 10c Untimed calls to any landline phone in Australia.



The Broadband Phone Company

**TA612V Smart Broadband Voice Adapter
with engin**

\$99 |S9656



**BONUS
\$50 cashback!**

- Turns your Broadband Internet Service into a Telephone
- 2 ports to connect analogue phones & fax machines
- Shares Internet connection via Ethernet ports & Broadband modem
- Prioritises voice traffic for optimum Quality of Service (QoS)
- Free Caller ID, Call Waiting, Voice Mail and 3-Way calling
- Local, long distance, and International calls at low prices
- Sleek, compact design that looks great next to your PC and save space with a vertical stand



NETGEAR



The Broadband Phone Company

engin Voice Box Series 1

\$139 |S9648

The engin Voice Box Series 1 converts your analogue phone signal to digital so that it can be sent over your broadband Internet connection. Simply connect a standard telephone and modem/router. Make and receive phone calls to anyone anywhere. The engin Voice Box series 1 offers the ability to connect 2 telephone lines to engin.



**BONUS
\$50 cashback!**

engin Voice Box Series 2

\$199 |S9649

The engin Voice Box Series 2 is perfect for an ADSL broadband connection. You can also connect your existing landline so that you can still receive phone calls from your existing telephone number, but still take advantage of engin's great call rates. You will never miss a call with the engin voicebox series 2, in the event of a power or broadband outage your telephone calls will be diverted back to your landline phone service.



**BONUS
\$50 cashback!**

engin Enabled Linksys Router

\$169 |T0725



A Division of Cisco Systems, Inc.



**BONUS
\$50
cashback!**



**Feature rich engin telephone service and Internet
sharing all in one box!**

Connect up to 2 engin telephone services and enjoy engin's great rates
All-in-one Internet-sharing Router PLUS 3 port switch
Powerful SPI firewall and QoS

engin Enabled Wireless Linksys Router

\$199 |T0726



A Division of Cisco Systems, Inc.



**BONUS
\$50 cashback!**



**Feature rich engin telephone service, Internet
sharing and wireless access point all in one box!**

- Connect up to 2 engin telephone services and enjoy engin's great rates
- All-in-one Internet-sharing router, 3 port switch, plus 54 Mbps Wireless G (802.11g) access point
- High security: W-Fi protected access™ (WPA), and powerful SPI firewall

**Wireless G ADSL Gateway with 2 Phone
Ports**

\$299 |T6435

ADSL2+ Modem,
Internet-sharing
Router, 4 port Switch
and Wireless G Access
Point in one box
High-speed ADSL2+
Modem gives you a
fast, "Always On"
connection to the
Internet
Two standard phone
jacks



A Division of Cisco Systems, Inc.

**Compact Wireless-G Internet Video
Camera**

\$259 |T6437

- Sends high-quality live video to your network wirelessly
- Built-in stand-alone web server; no PC necessary
- Security Mode automatically sends email alerts with video clips upon motion detection
- Supports up to 4 simultaneous remote users



A Division of Cisco Systems, Inc.

Call 1300 13 9999 | Click ht.com.au | Visit our stores

Colour LaserJet Printers...

Colour Laser Shot LBP-520D
Printer

\$445 | SO587

Canon
advanced simplicity



**HOT
PRICE**

- Printing Speed: Up to 19ppm Black & 4ppm Colour, A4 pages
- Resolution: 600 x 600 dpi (max 9600 x 600 dpi equivalent)
- Memory: 8MB
- Paper Handling: Input trays: 125-sheet paper tray.
- Interface: USB 2.0 High Speed, 10Base-T/100Base-TX (optional)

web links

CANON
canon.ht.com.au

DOUBLE A
doublea.ht.com.au

EPSON
epson.ht.com.au

HP
hp.ht.com.au

KONICA MINOLTA
konicaminolta.ht.com.au

RENTSMART
rentsmart.ht.com.au

SAMSUNG
samsung.ht.com.au

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Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Some items are indicated as delivery only. Some charges apply see page 62 for details.

HP 3000 Colour LaserJet Printer

\$1235 | Rent* \$13.84/wk | T3251

Delivery
Only



i n v e n t

HP 3000n Colour LaserJet Printer

\$1589 | Rent* \$17.81/wk | T3252

HP 3000DN Colour LaserJet Printer (Includes Duplex)

\$1790 | Rent* \$20.06/wk | T3254

The HP Color LaserJet 3000 provides you with the same speed, cost per page, reliability and networkability as a mono laser printer. And with features like new, patented HP ColorSphere toners, high impact colour and text, crisp detail and realistic imaging, you can be assured of quality whether you're printing in black-and-white or colour.

The new HP Color LaserJet, it's the clever way to take total control of office colour.

- Penalty free mono printing
- Fast 29ppm mono and 14ppm colour printing
- Versatile colour access controls (control by user, application or shut down colour for individual user completely)
- High quality printing with HP ImageREt 2400
- Optional comprehensive networking management
- Versatile paper handling
- Duty Cycle up to 60,000 pages



BONUS
Up to \$150
Coles Myer Voucher*

Colour LaserJet 2600N Printer

\$589 | Rent* \$6.60/wk | S2505



- Print Quality: Colour/Black best 600 x 600 dpi
- Print Speed: Black up to 8ppm; Colour up to 8ppm
- Memory: 16MB
- Warranty: 1 Year Limited Warranty (Return to HP/Dealer - Standard Bench Repair)

BONUS
\$50
Cashback*



AL C1100 Colour Laser Printer

\$779 | Rent* \$8.73/wk | G7367

EPSON
EXCEED YOUR VISION

- High speed printing at up to 25ppm (mono) and 5ppm (colour)
- Business photo quality printing featuring EPSON's Wrap Transfer engine and unique controller



Printers



HP2605dn Colour Laserjet Printer

\$799 | Rent* \$8.95/wk
| T7115



HP2605dtn Colour Laserjet Printer

\$1099 | Rent* \$15.33/wk
| T7113

- Print Speed: Fast 10ppm colour and 12ppm mono printing
- Resolution: 600 x 600 dpi
- Memory : 64MB RAM
- Paper Input: 250 sheet multipurpose tray
- Built-in 10/100 Base-TX Ethernet/Fast Ethernet print server

Magicolor 2430DL Printer

\$649 | Rent* \$7.27/wk
| R4297



KONICA MINOLTA

Minolta Magicolor 2400W Printer

\$499 | G8208



- Print Speed: 5ppm colour/20ppm mono
- Resolution: 2400 x 600 dpi; 1200 x 600 dpi
- Memory : 32MB RAM
- Paper Input: 200-sheet multi-purpose tray

CLP-550N Colour Laser Printer

\$829 | Rent* \$9.29/wk
| P9392

SAMSUNG

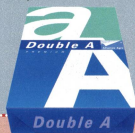
BONUS
500 sheet
paper tray³



A breakthrough in price, performance and quality:
The Samsung CLP-550N colour laser printer, prints in colour at 5ppm and in mono at 20ppm, with a maximum print resolution of 1200 dpi. It comes standard with 128MB of RAM, Postscript 3 and PCL-6 drivers, plus a 10/100BaseTX [ethernet] network card. This network card is ethernet only (not ethernet and Wifi).
Please note: The CLP-550N does not replace the CLP-500.

A4 White 80gsm 500 page ream

\$649 | T4776



Buy 10 reams and receive a Bonus DVD valued at \$19.95 OR buy 75 reams and receive a Sony DVPNS50S DVD Player valued at \$159. Available from 01/06/06 until 30/06/06 or while stocks last. See doublea.ht.com.au for redemption details.

CLP-510 Colour Laser

\$479 | S2190

SAMSUNG



BONUS
500 sheet paper tray³

- 6ppm colour/24ppm mono duplex laser
- Memory 64 MB (Max. 192 MB)
- Resolution Up to 1200 x 1200 dpi effective output
- Processor [CPU] Samsung SPGPm
- 250 sheet tray, 100 sheet MPF, Windows only, USB 2.0
- 3 year onsite warranty

¹ Purchase the HP 3000 for a \$100 Coles Myer Gift Voucher or Purchase the HP 3000n/3000dn to receive a \$150 Coles Myer Gift Voucher via redemption from HP. See hp.ht.com.au for more details.

² \$50 Cashback via redemption from HP. See hp.ht.com.au for more details.

³ Valid 01/05/06 till 30/06/06. Via redemption from Samsung. See samsung.ht.com.au for more details.

Mono Laser... Perfect for Office Networks

LaserJet 4250N

**\$2275**

G2900 | Rent* \$24.30/wk



- Print Speed: 43 ppm
- Resolution: 1200 dpi
- Memory: 64MB to 512MB

Other models also available:

4250/G3919/***1699**4250tn/G2894/***2699**4250dtn/G2840/***3249**

web links

BROTHER

brother.ht.com.au

DOUBLE A

doublea.ht.com.au

HP

hp.ht.com.au

KONICA MINOLTA

konicaminolta.ht.com.au

LEXMARK

lexmark.ht.com.au

RENTSMART

rentsmart.ht.com.au

SAMSUNG

samsung.ht.com.au

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* Valid 01/05/06 till 30/06/06.

Via redemption from Samsung. See samsung.ht.com.au for more details.

† \$50 Cashback offer via redemption from Brother. See brother.ht.com.au for more details. ‡ \$50 Cashback offer via redemption through HP. See hp.ht.com.au for more details.

ML-2551n

\$879

M4990 | Rent* \$9.85/wk



The ML-2551n comes with standard auto duplexing [the ability to print on both sides of a sheet of paper], as standard. The auto-duplexer can be activated by the push of one button or via the print driver and has been built-in without increasing the bulk or footprint of the ML-2551n.

- 24ppm duplex mono laser printer
- 32MB RAM
- 266Mhz processor
- Windows, Mac [OS8.6+] and Linux
- Postscript 3 and PCL 6 emulation
- Ethernet, Parallel and USB 2.0 connectivity
- Cost-per-page as low as 1.8 cents with toner save on
- 8,000 page toner cartridge (ships with 5,000 page toner cartridge)
- 3 year onsite warranty

BONUS
500 sheet
paper tray¹



**HOT
TAX TIME
PRICE**

\$149 | R2733

Model	HL-2040
Print Speed	Up to 20ppm
Resolution	Up to 1200 dpi
Ram	8MB
Warranty	1 year
Network	No

**\$149** | T4546

Model	PagePro 1400W
Print Speed	Up to 16ppm
Resolution	Up to 1200 x 600 dpi
Ram	8MB
Warranty	1 year
Network	No

brother

KONICA MINOLTA

Printers

Laser HL-5250DN Duplex/Network

\$499 | T3555

brother
At your side™

Print Speed: Up to 28ppm
Resolution: Up to 1200 dpi
Memory: 32 MB RAM
Paper Handling: 250 Sheets
Automatic Duplex Built In

BONUS
\$50
Cashback²



LaserJet 1320

\$589 | Rent* \$6.60/wk
| P9319

hp
invent

Print Speed: Up to 22ppm, letter
(up to 21ppm, A4)
Resolution: 1200 dpi
Memory: 16 MB RAM
Media input: 250 sheet tray
Automatic duplex built in
Duty cycle: 10,000 month

BONUS
\$50
Cashback³



\$199 | R9102

LaserJet 1020

Up to 14ppm
1200 dpi
2MB
1 year
No



\$199 | T7001

E120N

Up to 19ppm
Up to 600 x 600 dpi
16MB
1 year
Yes



\$199 | T0775

ML-2010

Up to 20ppm
Up to 1200 x 600 dpi
8MB
1 year
No



LaserJet 2430DTN

\$2289 | Rent* \$24.45/wk
| G2893



- Print Speed: 33 ppm
- Resolution: 1200 x 1200dpi
- Memory: 64MB to 320MB

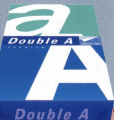
A4 White 80gsm 2500 Page Box

\$31⁹⁰ | T4779



A4 White 80gsm 500 Page Ream

\$649 | T4776

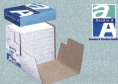


Buy 10 reams and receive a Bonus DVD valued at \$19.95 OR buy 75 reams and receive a Sony DVPNS50S DVD Player valued at \$159. Available from 01/06/06 until 30/06/06 or while stocks last. See doublea.ht.com.au for redemption details.

Inkjet Printers...

A4 White 80gsm 2500
page box

\$31⁹⁰ | T4779



SPP-2040 Photo Printer

\$215 | T3722



SAMSUNG

- 2" LCD screen
- 7 in 1 card reader
- USB 2.0 interface
- Direct PicBridge photo printing
- 6 x 4 photo printing
- 2 year RTB Warranty

web links

CANON
canon.ht.com.au

EPSON
epson.ht.com.au

SAMSUNG
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HP
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DOUBLE A
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¹ \$100 Cashback via redemption from HP. See hp.ht.com.au for more details.

² \$75 Cashback via redemption from HP. See hp.ht.com.au for more details.

OfficeJet Pro K550DTN

\$485 | T4312

- Print Speed: up to 37ppm
- Resolution: up to 4800 x 1200 dpi
- Memory: 32MB RAM
- Trays : Input: 250-sheet tray, 350-sheet tray
- Duplex: Automatic two-sided printing accessory
- 7500 page duty cycle

Also available:

OfficeJet Pro K550/T3724/*329



**Harris Technology
RECOMMENDS!**

BONUS
\$100 Cashback¹



Stylus R350

\$299 | T4508

- Print speed: 15ppm - Photo 57 seconds
- Resolution: 5760 x 1440 dpi
- 6 individual ink cartridges
- PC free photo printing
- CD and DVD printing on printable media - prints directly on surface
- 1 year return to base warranty

EPSON
EXCEED YOUR VISION



Pixma ip5200

\$229 | T0451



Camera
not
included

- Borderless 4"x 6" photo in 36 seconds
- Resolution: 9600 x 2400 dpi
- FINE print head technology for impressive speed and photo quality
- PicBridge ready - just connect and print!

Also available:

ip5200r/T0824/wireless/*325

i6100

\$529 | J2420



Canon
advanced simplicity

- Print speed: Up to 12ppm in mono/9ppm colour
- Resolution: 2400 x 1200 dpi
- 5 picolitre ink droplets
- Up to A3 size printing - 329 x 483mm

Photo Paper

Canon A4 High resolution matte paper 106gsm

200 sheets HR-101N

\$36⁹⁵ | 25569



Canon 6 x 4 glossy photo paper 100 sheets

GP4014X6-100

\$26⁹⁵ | Q2089



Epson Premium glossy paper 20 sheets C13S041285

\$32⁹⁵ | 98866



Epson A4 photo paper 20 sheets C13S041732

\$24⁹⁵ | M7599



HP A4 Photo glossy paper 50 sheets C7897A

\$21⁹⁵ | N5147



HP A4 Colour fast photo paper

20 sheets C1951A

\$24⁹⁵ | G0319



photosmart 8230
\$325 | T1632



Print speed: Up to 32ppm mono/31ppm colour
3 individual ink cartridges
View, edit and print photos with or without a PC
2.5" Colour display
Memory card reader and PictBridge



Stylus R230
\$167 | T3373



- Print speed: Up to 15ppm mono/15ppm colour
- Resolution: 5760 optimised dpi
- Paper Sizes: A4, A5, B5, 4" x 6", 5" x 7"
- Paper feed method: Friction feed with paper feeder



Deskjet 460CB
\$459 | T3509



Deskjet 1280
\$379 | R9756



- Produce wide format prints in vibrant, natural colour
- Print up to A3+
- Print speed: Up to 14ppm mono/11ppm colour
- Resolution: Up to 4800 x 1200 optimised dpi

Stylus R800
\$649 | Rent* \$7.27/wk | N9471



Stylus R1800
\$1179 | Rent* \$13.21/wk | S0287



- Print speed: Up to 13ppm mono & colour
- Photo 8" x 10" 71 sec+
- Resolution: 5760 x 1440 dpi
- Paper hold capacity: Up to 120 sheets at 90gsm

New UltraChrome Hi-Gloss™ pigment inks
5760 optimised dpi using multi layer piezo
15pl droplet size and variable sized droplet
technology (VSDT)
True border free printing up to A4

Inkjet Multifunction Printers...

MFC-640CW

\$329 | T4745brother
At your service.

Wireless

- 8-in-1 wireless with integrated network
- Print speed: Up to 20ppm in mono, Up to 15ppm in colour
- Memory: 16MB RAM
- Print resolution: Up to 1200 x 6000 dpi
- Paper capacity: Up to 100 sheets
- Automatic document feeder: Up to 10 sheets
- Network interface: 10/100 BASE-TX ethernet & 54 Mbps wireless

web links

CANON
canon.ht.com.au

BROTHER
brother.ht.com.au

DOUBLE A
doublea.ht.com.au

EPSON
epson.ht.com.au

HP
hp.ht.com.au

SAMSUNG
samsung.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

¹ \$50 Cashback via redemption from HP. See hp.ht.com.au for more details

² \$30 Cashback via redemption from Epson. See epson.ht.com.au

³ \$50 Cashback via redemption from Epson. See epson.ht.com.au

Stylus CX3700

\$115 | T6651EPSON
EXCEED YOUR VISION

VALUE



- Epson DURABrite ink for improved print quality and durability
- Resolution: 5760 x 1440 optimised dpi
- Powerful and easy to use bundled software
- True Border-Free™ edge-to-edge photo printing and copying on A4 and 4"x6"

BONUS
\$30
Cashback²

OfficeJet 5610

\$245 | T3163BONUS
\$50 Cashback¹

- Print and Copy: Up to 20ppm black and 13ppm colour
- Fax: 33.6kbps fax modem
- Scan: 1200 x 2400 dpi optical resolution
- 2 line text LCD display
- Junk fax barrier



Photosmart 2575

\$279 | T3415

- Print, Copy and Scan
- Print and Copy: Up to 30ppm black and 24ppm colour
- Resolution: Up to 4800 x 1200 optimised dpi
- Scan: Up to 2400 x 4800 optical dpi
- 2.5 colour graphic display

Stylus CX5700F

\$299 | T5925BONUS
\$50 Cashback³EPSON
EXCEED YOUR VISION

with Fax!



- Print, Copy, Scan and Fax
- Print speed: 20ppm mono/19ppm colour
- Resolution: 5760 x 1440 optimised dpi
- Copy: Up to 18ppm
- 6 x 4 photo: 51 seconds
- Scanning: CIS 2300 x 1200 dpi
- Memory card slot and PictBridge

PIXMA MP800

\$439 | T0559Canon
advanced simplicity

- Print, copy and scan
- Resolution: 9600 x 2400 dpi
- 6 x 4 photo: 36 seconds
- Scan: 2400 x 4800 dpi
- Camera, card, mobile and film direct
- CD/DVD Printing
- 3.5" LCD display

Photosmart PSC 3310

\$459 | T1646BONUS
\$50 Cashback¹

Wireless



- Print and Copy: Up to 32ppm black and 31ppm colour
- Scan: 4800 x 4800 dpi optical resolution
- Wireless 802.11g
- 6 individual ink cartridges
- 3.5" colour graphic display



OfficeJet 4255

\$185 | N8513



Up to 17ppm in black, up to 1200 x 1200 dpi
Up to 12ppm in colour, up to 4800 x 1200 optimised
dpi colour and 1200 input dpi
Scan quality up to 36 bit colour
Fax transmission 33.6kbps

Pixma MP450

\$199 | S9383

Canon
advanced simplicity



- Print, copy and scan
- 2pl fine print-head technology
- Resolution: 4800 x 1200 dpi
- 6 x 4 photo: 55 seconds
- Copy: Up to 22ppm, auto exposure copy
- Camera, card and mobile direct
- 1.9" LCD display

PhotoSmart PSC 3110

\$369 | T1638

BONUS
\$50 Cashback*



Print, Copy, Scan and Fax
Print: Up to 32ppm black and 31ppm colour
Resolution: Up to 4800 optimised dpi
6 individual ink cartridges
2.5" colour graphic display
Memory card reader and PictBridge

PIXMA MP530

\$389 | T6982

Canon
advanced simplicity



NEW

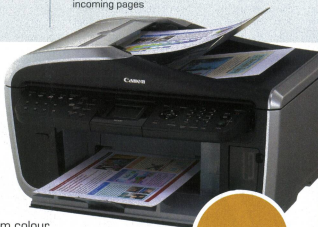
- Print, Copy, Scan and Fax
- Print: Up to 29ppm black and 19ppm colour
- Copy: Up to 28cpm black and 19cpm colour
- Resolution: 9600 x 2400 dpi print resolution
- Super G3 high-speed fax allows storage of up to 150 incoming pages

PIXMA 830

\$539 | T6987

Canon
advanced simplicity

Print, Copy, Scan and Fax
Print: Up to 30ppm black and 24ppm colour
Copy: Up to 29cpm black and 24cpm colour
Resolution: 9600 x 2400 dpi print resolution
Super G3 high-speed fax allows storage of up to 250 incoming pages
5 individual ink cartridges
2.5" colour graphic display



NEW

MFC-5840CN

\$309 | R0308

brother



2 YEAR WARRANTY

- 6-in-1 inkjet, flatbed network multifunction
- Colour Printer, 20ppm (mono) 15ppm (colour), 1200 x 6000 dpi, up to 350 sheet capacity, 16MB memory
- Colour Flatbed Copier, 17cpm (mono), 11cpm (colour), 1200 x 1200 dpi, zoom 25% to 400%
- Colour Flatbed Scanner, 19,200 dpi class (interpolated), Scan to key
- Colour Fax, 33.6kbps modem, up to 35 page ADF, up to 400 pages out of paper reception
- PC-Fax, sends & receives faxes through Windows, sends faxes through Mac
- Colour Scanner, 2400 dpi (interpolated), OCR software, editor software, scan to key
- PC Fax Sending, sends faxes through PC

MFC-215C

\$167 | S9335

brother



- Stylish and innovative flatbed design
- Capillary Tube Printing Technology for low noise and energy saving
- 4 separate ink cartridges (black yield 500 pages¹ and colour yield 400 pages¹)
- Illuminated function keys
- Up to 100 sheet paper capacity
- 8MB Memory as standard
- Easy operation
- ¹Input paper capacity 100 sheets

Laser Multifunctions...

A4 White 80gsm 500 page ream

\$649 | T4776



Buy 10 reams and receive a Bonus DVD valued at \$19.95 OR buy 75 reams and receive a Sony DVPNS505 DVD Player valued at \$159. Available from 01/06/06 until 30/06/06 or while stocks last. See doublea.ht.com.au for redemption details.

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KONICA MINOLTA
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RENTSMART
rentsmart.com.au
SAMSUNG
samsung.ht.com.au

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RentSmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Some items are indicated as delivery only. Some charges apply see page 62 for details.

¹ \$50 cashback via redemption from HP. See hp.ht.com.au for more details.

² \$100 cashback via redemption from Brother. See brother.ht.com.au for more details.

³ \$150 cashback via redemption from HP. See hp.ht.com.au for more details.

⁴ \$150 cashback via redemption from Brother. See brother.ht.com.au for more details.

⁵ \$200 cashback via redemption from Konica Minolta. See konicaminolta.ht.com.au for more details.

SCX 4521F Laser MFP

\$499 | T6638



- Print speed: Up to 20ppm
- Copy speed: Up to 20cpm
- Resolution: Up to 600 dpi output
- Compact and convenient flatbed design
- 4800 dpi enhanced colour scanning
- 33.6 Kbps fax modem, 3-second transmission
- PowerSave, TollSave and TonerSave efficiency modes



MF3240 Laser Multifunction

\$339 | T6869

Canon
advanced simplicity

- Print, Copy, Scan and Fax
- Print speed: Up to 20ppm
- Copy speed: Up to 20cpm
- Resolution: Up to 1200 x 600 dpi enhanced
- CCD scanning 1200 x 2400 dpi
- All-in-one cartridge: low maintenance
- Optional network printing
- Flatbed colour scanner
- TWAIN compatible



NEW



3050 All in One Printer

\$499 | T4389

- Print, Copy, Scan and Fax
- Print speed: Up to 18ppm
- Scan: 600 dpi optical
- Fax: 33.6kbps
- Memory: 64MB RAM
- 1 year warranty



3055 All in One Printer

\$799 | Rent* \$8.95/wk | T4390

- Print, Copy, Scan and Fax
- Print speed: Up to 18ppm
- Scan: 1200 dpi optical
- Fax: 33.6kbps
- Memory: 64MB RAM
- 1 year warranty



3390 All in One Printer

\$1079 | Rent* \$12.09/wk | T4392

- Print, Copy, Scan and Fax
- Print speed: Up to 21ppm
- Scan: Up to 1200 dpi optical
- Fax: 33.6kbps
- Memory: 64MB RAM
- 1 year warranty



2820 Laser Fax Machine

\$349 | S1320

brother

- Mono laser faxing
- Fax: 14.4Kbps Fax Modem
- Best Transmission Speed: Approx. 6 seconds per page
- Standard Memory: 8MB Memory
- Fax Page Memory: Up to 400 pages
- Dual Access: Yes



SCX-4216F Multifunction

\$399 | J2137

SAMSUNG

- Speed: 16ppm mono laser printer/copy/scanner/fax + auto document feeder colour scanner
- Fax: 33.6Kbps fax
- 250 sheet tray
- Windows only
- USB & IEEE1284 connectivity [ethernet not available]



Printers

FC-8460N Laser Printer 5-in-1 MFC

\$999 | Rent* \$11.19/wk
| T6017

brother

BONUS
\$100
cashback²

Print Speed: 28ppm
Resolution: 1200 dpi
Memory: 32MB RAM
Duplex: Manual
Capacity: 250 Sheets
Network Ready



2840 All-in-One

\$1689 | Rent* \$18.93/wk
| S1217



BONUS
\$150 cashback³

• Print Speed: 20ppm
black, 4ppm colour
• Resolution: Up to
600 x 1200 dpi
• Memory: 96MB RAM
• Capacity: 375 sheets



MF8180c Laser Multifunction Printer

\$1299

6868 | Rent* \$14.56/wk

**INTRODUCTORY
Price after
promotion
\$1489**

Brilliant quality colour and mono printing
equivalent to 9600 x 600 dpi
Prints up to 19ppm mono and 4ppm colour
with no warm up time
Uses Canon's unique Hi-SCoA compression
technology for super fast printing
Scan at up to 48-bit colour depth at
1200 x 2400 dpi resolution
33.6Kbps Super G3 fax
50 sheet Automatic Document Feeder
Built in network for printing and PC faxing
Prints on a variety of media including heavy
paper and envelopes

Canon
advanced simplicity



**HOT
TAX TIME
PRICE**

MFC-9420CN 5-in-1

\$1499 | Rent* \$16.80/wk
| T4070

brother

BONUS
\$150 cashback⁴

• Print speed: 31ppm
mono/8ppm colour
• Colour Laser Super G3
Fax
• Colour Flatbed Laser
Digital Copier
• Colour Flatbed Scanner
• PC Fax Send/Receive



Magicolor 2480MF

\$1399 | Rent* \$15.68/wk
| T6605

KONICA MINOLTA

BONUS
\$200 cashback⁵

• Print, Copy and Scan
• Colour: up to 5 ppm
• Monochrome: Up to
20ppm
• Resolution 2400 x 600 dpi



PagePro 1390MF

\$549 | T6606

KONICA MINOLTA



All-in-one print, copy, scan and fax system

- Print speed up to 20ppm (A4)
- Copy speed up to 20cpm
- Resolution 600 dpi (print/copy),
1200 dpi (scan)
- 32 MB RAM standard memory
- Automatic document feeder
- 1 year replacement warranty

**Delivery
Only**

AL-CX11NF Colour Laser MFP including Fax

\$1589 | Rent* \$17.81/wk
| S8454

EPSON
EXCEED YOUR VISION



- High speed printing at up to 25ppm
(mono) and 5ppm (colour)
- Sharp text and dynamic images with an
effective print resolution of 2400 dpi (RIT)
- Optical scanning resolution up to an
enhanced 9600 dpi
- Epson's Wrap Transfer System for added
speed and accuracy of toner placement
- Epson AcuBrite Toner for vibrant and
detailed prints
- Full Faxing capabilities with up to 60
speed dials
- Auto document feeder for easy and quick
copying and faxing

Toner cartridges & Inkjet cartridges



invent

HP Original Rewards

HP Original Rewards is an exciting program from HP that rewards SMB for purchasing (and recycling) HP LaserJet Printer Cartridges, Inkjet Cartridges and HP Paper. Register now to receive points for every purchase invoice you send in. Terms and conditions apply. For more details see www.hp.com.au/originalrewards

HP Planet Partners

HP Planet Partners and Cartridges 4 Planet Ark have created a program that extends not only the life of your print cartridges, but also the life of the planet.

More information at: www.hp.com.au/recycle

web links

BROTHER
brother.ht.com.au

CANON
canon.ht.com.au

EPSON
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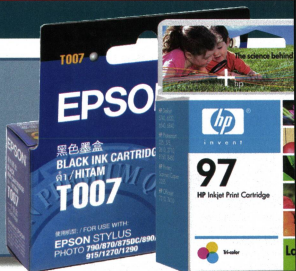
SAMSUNG
samsung.ht.com.au

KONICA MINOLTA
konicaminolta.ht.com.au

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*Specially marked HP Ink Packs will be limited to the following range: HP C6578DA, HP C1823DA, HP 51645A, HP C6615DA, HP C8727AA, HP C8728AA, HP C6656AA, HP C6657AA, HP Y2025AA, HP Y2016AA, HP Y2017AA

Harris Technology is your one stop shop for all things Ink, Toner and Paper. Whatever you need for your laser printer, multifunction device, photo printer or wide format printer, Harris Technology makes it easier for you to shop. Featuring wide range of Ink, Toner and Paper from the world's leading IT vendors - simply visit one of our nationwide Business Centres, call our Contact Centre on 1300 13 9999 or visit ink.ht.com.au



HP Toner

HP Q6511x LaserJet Black Toner for 2400 Series 12000 Yield	G4121	*325
HP Q2612A LaserJet 1020/1015/1022/3015/3020 2000 Page Yield	L0381	*113
HP Q5942A Black Toner for 4250/4350 Series 10,000 Yield	Q4123	*239
HP Q5949A Black Cartridge 1160/1320 series 2500 Yield	P9322	*115
HP Q5949x Black Cartridge 1320 series 6000 Yield	P9323	*210
HP Q3961A Colour LaserJet 2550/2840 Cyan Toner 4000 Yield	N9527	*159
HP Q3960A Colour LaserJet 2550/2840 Black Toner 5000 Yield	N8595	*127
HP Q3963A Colour LaserJet 2550/2840 Magenta Toner 4000 Yield	N9532	*159
HP Q3962A Colour LaserJet 2550 Yellow Toner 4000 Yield	N9528	*159
HP Q6000A Colour Laser 2600 Black Toner 2500 Page Yield	S1568	*115
HP Q6003A Colour Laser 2600 Magenta Toner 2000 Page Yield	S5172	*129
HP Q6002A Colour Laser 2600 Yellow Toner 2000 Page Yield	S5171	*129
HP Q6001A Colour Laser 2600 Cyan Toner 2000 Page Yield	S5170	*129

Samsung Toner

Samsung Toner for SCX-4216F MFC Machine	J9653	*99
Samsung ML 2150/2151N/ 2551N - 8,000 Page Toner Cartridge	N1521	*239
Samsung ML-2250 Toner 5000 Page Yield	Q2002	*145
Samsung CLP-500/CLP-550N Black Toner 7000 page Yield + Cyan/Magenta/Yellow	M9755	*155
Samsung CLP-510 5,000 page Yellow Cartridge	S2538	*169
Samsung CLP-510 5,000 page Magenta Toner Cartridge	S2537	*169
Samsung CLP-510 5,000 page Cyan Toner Cartridge	S2536	*169
Samsung CLP-510 7,000 page Black Toner Cartridge	S2534	*159
Samsung ML-2010 Black Toner 3,000 Page Cartridge	T0776	*115
Samsung Toner for SCX 4200 3000 Page Yield	T6648	*125

Brother Toner

Brother Toner TN-2025 for HL2040 Up to 2500 pages A4	R7305	*79
Brother TN-3060 Toner HL5140/5150Q/51700N/8840/8440 6700 Y/E	N1558	*112
Brother TN-6600 Toner Cartridge For Printer/MFC/Fax - Single	95205	*112
Brother TN-7600 Toner Cartridge For HL1650/1670N/+ Single	C6970	*118
Brother TN-800 Toner Cartridge For Printer/MFC/Fax - Single	94457	*45
Brother TN-3030 Toner HL5140/5150Q/51700 8840Q/8440/8220	N1557	*81

Canon Toner

Canon EP-22 Toner Cartridge LBP600/LBP610/LBP1120	87989	*85
Canon Laser Cartridge for LBP-3000	S1818	*99
Canon CART308 Black Toner for LBP3300 Laser	T6876	*97
Canon CART301BK Black Toner for LBP5200	S1412	*149
Canon EP-26 Toner Cartridge LBP3200/MF5650	L7104	*119
Canon EP87bk Black Toner for LBP 2410 Laser	J2817	*125

Konica Minolta

Konica Minolta MagiColor 2300 4,500 Page Toner - Cyan	F8855	*210
Konica Minolta MagiColor 2300 4,500 Page Toner - Black	F8852	*144
Konica Minolta MagiColor 2300 4,500 Page Toner - Yellow	F8853	*210
Konica Minolta MagiColor 2300 4,500 Page Toner - Magenta	F8854	*210
Konica Minolta MC 2400 Toner Black [4.5K]	R0703	*144
Konica Minolta MC 3300 Toner Cartridge, Black	N5137	*92
Konica Minolta 1300 Series Toner 6000 Page Yield	M0897	*159

3 WAYS TO SHOP CALL
CLICK VISIT

harris technology 

Consumables

Canon
advanced simplicity

BC15BK-TWIN Black Ink Tank - 2 Packs

\$39 | T7195



BC16VP Value Pack

\$69 | T7196

- 1 x BC16C/M/Y
- 1 x PP101 4x6"
- 20 sheets



brother
At your side

LC-47BK Black Ink Twin Pack

\$57 | T7160



LC-47 Colour Value Pack

\$47 | T7161



HP Supplies
Authorized Reseller



BONUS HP PHOTO PAPER VALUED AT \$35

When you purchase any 2 original HP Inkjet Print Cartridges* specifically marked with a pink tab you will receive a **BONUS**:

1 HP Advanced A4 Photo Paper - 20 sheets - valued at *\$17.95

1 HP Advanced 4x6" Photo Paper - 60 sheets - valued at *\$17.95

Terms and conditions apply. For more details and to register visit

www.hp.com.au/supplies

HP Ink cartridges

HP C9363WA No 97 Tri Colour Ink Cartridge	Q1870	\$54
HP 51645a - No 45 Black Inkjet Cartridge	22543	\$48
HP C8767WA No 96 Black Ink Cartridge - High Volume	Q1677	\$48
HP No 56 Black Inkjet Cartridge	S2199	\$32
HP c6657aa - No 57 Tri-Colour Ink Cartridge	F9886	\$53
HP NO 84 Black Dye Ink Cartridge	D6206	\$62
HP 95949A Black Cartridge 1160/1320 Series 2500 Yield	P9322	\$115
HP C9352AA No 22 Tri Colour Inkjet Print Cartridge	T0853	\$25
HP c8727aa - No 27 Black Ink Black Cartridge	G0251	\$29
HP Y2016AA 27/28 Twin pack/HP 27A and HP 28A Combo Pack	S5190	\$54
HP c6615DA No 15 Black Inkjet Print Cartridge	A2595	\$45
HP Y2025AA No 56A Black Inkjet Cartridge - Twin Pack	S0694	\$45

Canon Ink cartridges

Canon BC15BK Black Ink Cartridge for i70/i80/iP90 Portable	H8779	\$25
Canon PG-40 Black Ink Cartridge for iP1600 and iP2200	S7128	\$38
Canon BC16BK Replacement Black Ink Tank	C3420	\$25
Canon BC16BK Black Cartridge BJC3/5xxx 54/5/6/7xx MCPx00	B1586	\$22
Canon CL-41 Tri Colour Cartridge for iP1600/iP2200	S9213	\$40
Canon PG15BK Black Ink Cartridge	S9562	\$26
Canon CL18BK Photo Black Ink Cartridge	S9587	\$26
Canon CL18C Cyan Ink Cartridge	S9563	\$26
Canon CL18M Magenta Ink Cartridge	S9564	\$26
Canon CL18Y Yellow Ink Cartridge	S9565	\$26
Canon CL18VP Value pack 1x CL18BK/C/M/Y & 240 Sheets Paper	T4497	\$93

Brother Ink cartridges

Brother Black Ink Cartridge for DCP110C/MFC215C/4100N/6200N	Q1657	\$31
Brother Cyan Ink Cartridge for DCP110C/MFC215C/4100N/6200N	Q1659	\$17
Brother Magenta Ink Cartridge for DCP110C/MFC215C/4100N/6200N	Q1660	\$17
Brother Yellow Ink Cartridge for DCP110C/MFC215C/4100N/6200N	Q1661	\$17

Epson Ink cartridges

Epson T007 Black Ink For Stylus 870/890/895/1270/1290	96455	\$29
Epson T0461 Black Cartridge for C63/C83/Cx5500 Printer	L7026	\$19
Epson T0548 Matte Black for Photo Stylus R800/R1800	N9686	\$18
Epson T0541 Photo Black Photo Stylus R800/R1800	N9687	\$18
Epson T0631 Black Ink Cartridge For Epson C67 Printer	T3404	\$13
Epson T0341 Black Ink For Stylus Photo 2100	F3541	\$18
Epson T050190 Black Ink For SC400/440/460/600/640/670	M4264	\$25
Epson T051190 Black Ink For Stylus 740/760/800/850/860/1160/	M5362	\$34
Epson T029 Tri-Colour Ink For Stylus C60/CX3100	D0044	\$30
Epson T052090 Tri-Colour Ink For Stylus 400/440/460/600/640/670	M2858	\$43
Epson T027 5 Colour Ink For Stylus Photo 810/830U/925/935	C9765	\$30
Epson T04291 Black Ink For Stylus Photo R310/ RX-510	M0952	\$17

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All your accounting needs for tax time...

QuickBooks Pro 2006/07

\$729

FULL | T6297

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UPGRADE | T6298

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\$200 Cashback¹

- Process credit card statements
- Integrated payroll management
- Time billing and job costing
- Integration with Microsoft Office
- Multi user enabled

QuickBooks Premier 2006/07

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NEW RELEASE

BONUS
\$500 Cashback¹

- Time billing and job costing
- Integration with Microsoft Office
- Multiple currency
- Up to 5 simultaneous users
- Industry specific versions

web links

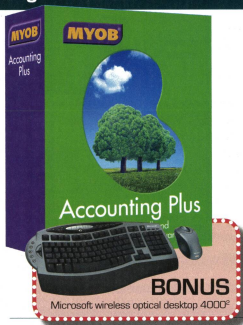
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Please note: All purchases subject to terms & conditions and returns policy. Delivery changes may apply. Not all items stocked in store but available for pick-up/delivery.

¹ Cashback by redemption from Quicken. The promotion applies only to customers who purchase a full version between 22/05/06 and 31/07/06. You must also register your product with Quicken before 17/08/06 to qualify for the offer. For full details visit quicken.ht.com.au. Standard postage fees apply for redemption offers.

² Microsoft bonus offer via redemption from MYOB, standard postage fees apply. Offer only applies to purchases of full products (excluding upgrades and OEMs) made between 22/05/06 and 31/07/06. Claim form must be received by MYOB no later than 14/08/06. See myob.ht.com.au for full terms and conditions. Standard postage fees apply for redemption offers.

³ Purchases made on or after 19 April 2006 are eligible for Buyer Protection. MYOB will provide a free upgrade to the latest 2006/07 version upon its release.



Accounting Plus v15

\$489

+ BUYER PROTECTION

| FULL | R9227

\$309

+ BUYER PROTECTION

| UPGRADE | R9442

MYOB Accounting Plus comes with an award winning integrated payroll, is the ideal single-user business management tool and is a great accounting solution for smaller employers. MYOB Accounting Plus also makes it easy to track and charge for your time, and provides access to powerful profit-building information about your business.

MYOB

QuickBooks Plus 2006/07

\$499

| FULL | T6294

\$355

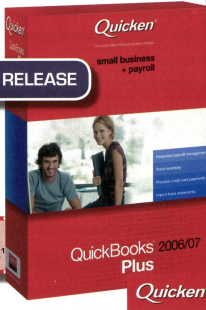
| UPGRADE | T6295

Quickbooks Plus is perfect for small businesses with employees - it includes integrated payroll and inventory management.

- Invoice, pay bills and track expenses
- Process credit card statements
- Track inventory
- Integrated Payroll management
- Integrated BAS and online lodgement

NEW RELEASE

BONUS

\$150 Cashback¹

Retail Manager 8

\$1729

| S1237

MYOB

- Process all your sales transactions
- Get detailed reports on your performance
- Manage stock levels and purchases



NEW RELEASE

Retail Starter Kit 2006/07 Hard Bundle

\$929

| T6305

Quicken

For complete point of sale and back office management - Retail Starter Kit includes everything you need to get started. QuickBooks Plus 2006/07, Retail Point of Sale 2006/07, receipt printer, cash drawer, barcode scanner

Software

Quicken

QuickBooks EasyStart 2006/07

\$99 | T6292

Designed for first-time users of accounting software, EasyStart makes it easy to get started with simple, practical tools to manage essential business tasks.

Personal Plus 2006

\$145 | T0937

Quicken Personal Plus 2006 provides tools to help you manage your finances, prepare for tax time and plan for the future.

Quicken Home & Business 2005/06

\$369 | S9581

Quicken Home & Business 2005/06 combines the best of investing and basic business cash flow management.

Business Basics

\$133 | G4153

MYOB BusinessBasics simplifies the way you quote, track and invoice your jobs, simultaneously tracking your transactions and GST, and providing you with over 70 reports and graphs to help you understand your business.

Accounting v15

\$289 | + BUYER PROTECTION® | R9042

Ideal for owner-operators, MYOB Accounting helps your customer process sales and purchases, track receivables, payables and GST, email your quotes and invoices and more – all with the click of a few buttons. And if your customer carries stock, MYOB Accounting helps them track, back-order, buy or build what they need.

Premier v9

\$1369 | + BUYER PROTECTION® | R9228

MYOB Premier is issued with three user licences and makes it easy for several people to have simultaneous access to information that's relevant to the work they're doing.

Multi-user capability can speed up internal processes and save your accounts personnel from being interrupted with requests for information about inventory, sales, accounts, creditors and so forth.

QuickBooks Accounting 2006/07

\$229 | T6293

QuickBooks is much more efficient than spreadsheets, word-processing, or paper ledgers. Quickly and easily manage basic tasks like printing cheques, paying bills, generating reports, invoicing customers and tracking expenses. You'll spend less time and money on bookkeeping and paperwork – and have more time to work on other important areas of your business.

BONUS

\$50 Cashback*

NEW RELEASE

QuickBooks 2006/07 Accounting

Retail Basics

\$264 | S1238

MYOB

While a cash register can help you process sales, it has its limitations. MYOB RetailBasics can turn your PC into something with a lot more functionality than a cash register – just connect your PCs hardware and you have an efficient system to process your sales.

RetailReady

\$899 | T0608

MYOB

If your customers pay using multiple payment types, for example a mix of cash and credit, simply enter the breakdown and MYOB RetailBasics will calculate any change that needs to be given.

Internet security...

eTrust Internet Security Suite

\$99 | T6414

- eTrust EZ Antivirus - detects and eliminates viruses, worms and Trojan horse programs
- eTrust Personal Firewall - stops hackers from attacking your PC
- eTrust PestPatrol® Anti-Spyware - protects against spyware, adware and other non-viral threats



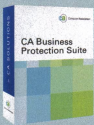
Business Protection Suite

r2 Base

\$1239 | 5 USER | T6684

Delivery Only

- BrightStor ARCserve Backup
- BrightStor ARCserve Backup for Laptops and Desktops
- eTrust Antivirus
- eTrust PestPatrol Anti-Spyware Corporate Ed

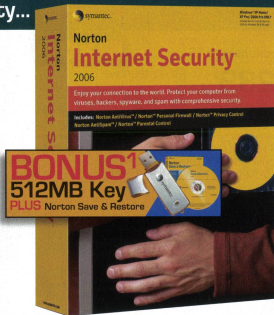


web links

CA
ca.ht.com.au
EMC
emc.ht.com.au
MANACOM
manacomp.ht.com.au
MCAfee
mcafee.ht.com.au
SYMANTEC
symantech.ht.com.au
TREND MICRO
trendmicro.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery changes may apply. Not all items stocked in store but available for pick-up/delivery.

* Bonus 512MB USB key + Norton Save & Restore CD offer is via mail-in redemption to Symantec, standard postage fees apply. This offer is not available in conjunction with any other offer. Valid for purchases made between 15/05/06 and 30/06/06, redemption form must be received by 14/07/06. For full terms and conditions visit symantec.ht.com.au.

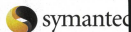


Internet Security 2006

\$89 | FULL | T0683

\$169 | 3 USER | T0690

Norton Internet Security automatically blocks hacker viruses, and spyware. It filters out phishing email and spam, while its privacy and parental controls protect your personal information and shield your children from harm. And should your operating system or browser have a security hole, Norton Internet Security is there to handle resulting attacks.



Internet Security 2006

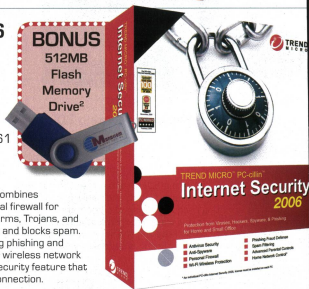
\$89 | FULL | T1549

\$165 | 3 USER | T3261



Trend Micro PC-cillin Internet Security 2006 combines award-winning antivirus security and a personal firewall for comprehensive protection against viruses, worms, Trojans, and hackers. It also detects and removes spyware and blocks spam. It even guards against identity theft by blocking phishing and pharming attacks. Plus, PC-cillin protects your wireless network with Wi-Fi Intrusion Detection, an innovative security feature that alerts you when an intruder uses your Wi-Fi connection.

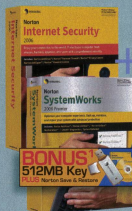
*Applicable only to the purchase of a full version copy of Trend Micro Internet Security 2006, Bonus 512MB Flash Memory Drive offer is via mail-in redemption to Manacomp, standard postage fees apply. Valid for purchases made between 20/05/06 and 31/07/06, redemption form must be received by 28/08/06. For full terms and conditions visit manacomp.ht.com.au.



Internet Security 2006 and Systemworks Premier 2006

\$131 | T0834

The ultimate PC protection pack: combines Norton Internet Security 2006 and Norton SystemWorks 2006 Premier.

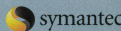


Antivirus 2006

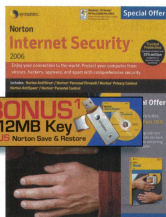
\$56 | FULL | T0594

\$89 | 3 USER | T0595

Norton AntiVirus 2006 wards off a host of Internet threats. Whether its surfing or chatting, emailing or file swapping.



Software

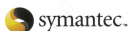


Internet Security 2006 with Ghost 10.0 Bundle

\$135 | T0833

Enjoy your connection to the world plus save the things you care about. Norton Internet Security 2006 protects your computer from viruses, hackers, spyware and spam with comprehensive security.

While with Norton Ghost 10.0 you can back-up everything on your computer. From photos and music to tax documents, Norton Ghost 10.0 automatically backs up and recovers everything on your computer. reliable, efficient, and versatile, Norton Ghost optimises backup space, works with a wide range of media devices, and brings back your entire system in a few short steps.



Ghost 10.0

\$95

FULL | T0562

\$75

ACADEMIC | T0563

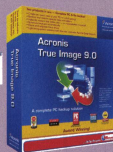


Norton Ghost 10.0 automatically backs up and recovers everything on your computer. Reliable, efficient, and versatile.

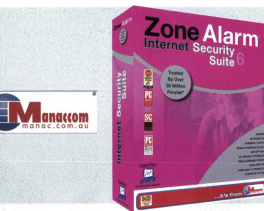
Acronis True Image v9

\$75

T6030



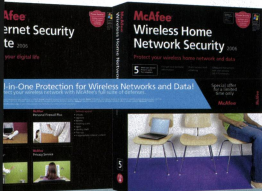
- Create an exact copy of your PC for a full backup
- Backup and restore specific files and folders
- Instantly restore the entire disk - no reinstallation required!
- Schedule backups automatically
- Lightning-speed restores with the new, exclusive Acronis Snap Restore



Zone Alarm Security Suite v6

\$94 | S9405

- Anti-Spyware & Email Security
- ID/Privacy Protection & Parental Control
- Triple Defense Firewall & IM Protection
- Wireless PC Protection & Spam and Phishing Blocker
- Antivirus Protection



Internet Security and Wireless Home Network Bundle

\$105 | T7238



- Prevents viruses from infecting your PC
- Prevents hackers from invading your PC
- Stops unwanted, inappropriate and malicious email
- Protects against spying and pop-up ad programs
- Helps stop identity theft

This bundle offer is only available for a limited time and while stocks last. This offer is not available in conjunction with any other offer.

EMC Retrospect Professional 7.5

\$169

T5156

EMC Retrospect Single Server 7.5

\$1099

T5157



- Includes 2 clients for Win/Mac
- No support for servers

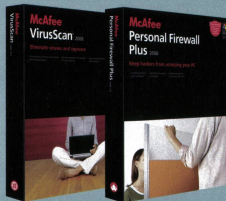
Some items are indicated as delivery only. Some charges apply see page 62 for details.

Virus Scan Home and Personal Firewall Plus Bundle

\$48 | T7237

With McAfee Virus scan you get proven security that protects against viruses and spyware, while with McAfee Personal Firewall Plus you get proven security that helps prevent hacker attacks, safeguards your financial documents, personal information, photos, and online communications, by preventing unwanted Internet connections to or from your PC.

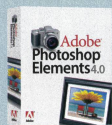
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Design/Multimedia software


Photoshop Creative Suite 2 v9 - Windows
\$1104 | R9493

Unprecedented adaptability lets you custom-fit Photoshop to the way you work. And with more efficient editing, processing, and file handling, there's no slowing you down.


Photoshop Elements 4.0 - Windows
\$164 | T0689

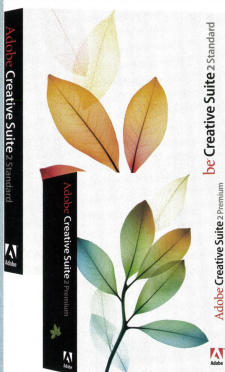
Edit and enhance your photos by fixing common flaws instantly or using advanced options for more control. Show off your creativity in entertaining slide shows, photo mail, Web galleries, and countless other ways.

web links

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adobe.ht.com.au
AUTODESK
autodesk.ht.com.au
COREL
corel.ht.com.au
MICROSOFT
microsoft.ht.com.au

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Some items are indicated as delivery only. Delivery charges apply. See page 62 for details.


Creative Suite 2 Standard
\$1493 | R9487

Creative Suite 2 Premium
\$1993 | R9485

Adobe Creative Suite 2 software is a unified design environment that combines full new versions of Adobe professional tools with Version Cue CS2, Adobe Bridge and Adobe Stock Photos to deliver the next level of integration in creative software.

Standard Includes:

Adobe Photoshop CS2, Illustrator CS2, Indesign CS2, Version Cue CS2, Adobe Bridge, Adobe Stock Photos

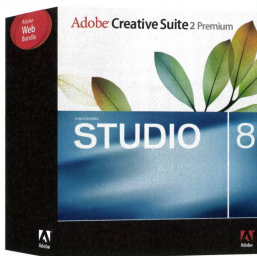
Web Bundle - Windows

\$2899 | T4082

Web Bundle - Windows - Academic

\$879 | T4337

The Adobe Web Bundle offers **Studio 8**, the essential solution for web design and development, with the unified design environment of **Adobe Creative Suite 2 Premium** software. Now with one package, you can design, develop, manage, and maintain rich, interactive experiences for easy delivery to millions of viewers on the web, on mobile devices, and in print using industry standards such as Flash format and Adobe PDF.


Studio with Flash Pro 8
\$1525 | T4263

Studio with Flash Pro 8 - Academic
\$489 | T4264

With the latest releases of Dreamweaver, Flash Professional, Fireworks, Contribute and FlashPaper, Studio 8 offers web designers and developers a new level of expressiveness, efficiency and simplified workflow to create websites, interactive experiences and mobile content.

Suitable for Windows and Macintosh.



3 WAYS TO SHOP CALL
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Software

COREL



Paint Shop Pro X

\$273 | T0535

Corel Paint Shop Pro X delivers a complete set of photo editing tools to help you create professional-looking photos fast! By combining automatic photo fixes and precision editing controls with a revolutionary Learning Center, Paint Shop Pro is a first of its kind - an easy-to-use photo editor for anyone who wants to create stunning photos right out of the box. Plus, it includes Corel Photo Album 6 - Standard Edition, the easiest way to organise and share your digital photos.



CorelDRAW Graphics Suite X3 + Bonus Tablet

\$654 | T7129

With this comprehensive graphics suite, users can confidently tackle a wide variety of projects - from logo creation and web graphics, to multi-page marketing brochures, or eye-catching signs. Now with enhanced illustration, page layout, photo editing, powerful bitmap-to-vector tracing, and helpful new learning tools, this integrated graphics suite delivers the ultimate combination of superior design capabilities, speed, ease-of-use and affordability that cannot be matched by any other graphics software.

AutoCAD LT® 2007



AutoCAD LT 2007

\$2075 | T6088

autodesk

Enhance your productivity with AutoCAD LT software, the world's number one-selling drafting and detailing product. AutoCAD LT 2007 is better than ever. Blocks are now dynamic, Express Tools for better layer management were added, and drafting enhancements abound. Now the tasks you perform every day are streamlined with just one thing in mind - boosting productivity. With full DWG file format compatibility, and access to attached drawings, you've never experienced a more efficient design process.

AutoCAD 2007



\$6889 | T6087

AutoCAD® 2007

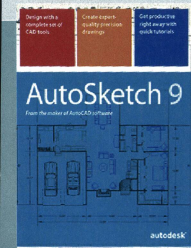
Design, visualise, and document your ideas clearly and efficiently with AutoCAD software. From conceptual design through drafting and detailing, AutoCAD 2007 enables you to explore ideas like never before. Create, edit, and develop design alternatives using realistic solids and surfaces in an updated design environment.

AutoSketch 9 Windows

\$229 | P7266

AutoSketch software provides a complete set of CAD tools for creating professional-quality precision drawings. A series of tutorials get you up and running fast. A Microsoft Windows XP-like interface provides a familiar environment for straightforward drafting. Content libraries give you the simplicity of ready-made, drag-and-drop content. And DWG format compatibility means you can create and share industry-standard drawings from the get-go.

autodesk



Digital Image Suite Plus 2006

\$167 | T7206

The Digital Image Suite PLUS is the total digital imaging solution to polish your creativity, whether you're a beginner or a pro. Digital Image Suite PLUS gives you everything you need to create your own multimedia spectacle.

Publisher 2003

\$279 | L0820

Publisher 2003 is a comprehensive solution for creating and publishing a wide variety of publications for desktop printing, commercial printing, e-mail distribution, or viewing on the Web.

Visio Standard 2003

\$329 | L1540

Visio 2003 is a diagramming program that can help create business and technical diagrams that document and organise complex ideas, processes, and systems.

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Software

Acrobat 7.0 Professional

\$699

Q7822

Adobe Acrobat 7.0 Professional software is the advanced way to create, control, and deliver more secure, high-quality Adobe PDF documents.



Acrobat 7.0 Standard

\$475

Q7824

Adobe Acrobat 7.0 Standard software is the simple way to create and share more secure and reliable Adobe PDF documents.

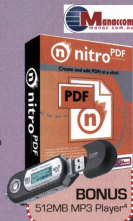


Nitro PDF Professional

\$182

T7163

Create PDFs with one click from almost any software product. Nitro PDF can be integrated into the Microsoft Office toolbar for maximum convenience.



BONUS
512MB MP3 Player*

Picture for illustration purposes only.

*Offer valid from 01/05/06 till 31/06/06. Via redemption from Nuance. Standard postage fees apply. See nuance.ht.com.au for more details.

*Bonus 512MB MP3 Player offer is via redemption from Manacomm. Standard postage fees apply. This offer is not available in conjunction with any other offer. Valid for purchases made between 20/05/06 and 31/07/06. For full terms and conditions visit manacomm.ht.com.au.



HOT PRICE

SAVE \$30

Office 2003 Student and Teacher Edition¹

\$189 | L0802

Provides a way for you and your family to work at home with confidence and peace of mind using the full versions of the best Office products at the best price.



HOT PRICE

SAVE \$44

Office Small Business 2003 Upgrade

\$385 | L0827

Microsoft Office Small Business Edition 2003 uses familiar, integrated, and easy-to-use software to help you and your staff manage customers and sales opportunities more effectively.



HOT PRICE

Office Mac 2004 Student Teacher Edition

\$189 | N6773

Gives you all the leading presentation, spreadsheet, word processing, and e-mail software found in Office 2004 for Mac Standard Edition in one convenient, specially priced package.

Microsoft



FileMaker Pro 8 Retail

\$459 | S8597

FileMaker Pro 8 gives you the tools you need to manage, customize, and share your information on a network or over the web with Windows and Macintosh.



FileMaker Pro 8 Advanced Retail

\$845 | S8604

FileMaker Pro 8 Advanced has all the features of FileMaker Pro 8 plus advanced development and customization tools so you can efficiently build more powerful, more customised databases.



FileMaker Server 8 Retail

\$1689 | T0640

FileMaker Server 8 includes robust, real-time database sharing, advanced security options, and powerful, remote administration capabilities.



Dragon Naturally Speaking Mobile 8.0 with Philips Digital Recorder

\$569 | T2390

Includes the Dragon NaturallySpeaking 8 preferred software, a certified digital recorder, special linking software and a high-quality headset microphone for use with your PC.

BONUS

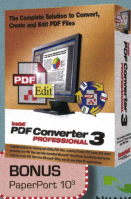
Dragon NaturallySpeaking 8 Video Guide*



PDF Converter Professional 3.0 - Full

\$175 | S1878

Now for the first time you can edit directly within a PDF itself! Add copy, delete, rearrange, even remove or change the position of charts and graphics. With PDF Converter Professional 3, it's as easy to access information within a PDF document as it was in the original file.



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ON-SITE INSTALLATION OF STANDALONE DESKTOP/NOTEBOOK

\$99 | M4290 | CODE: HT018**1 HR
SERVICE**

This service provides for the on-site unpacking, setup and configuration of a single desktop or notebook PC and those external peripherals such as a printer or scanner which were purchased along with the desktop or notebook PC from Harris Technology. Service performed will include the configuration of internet access and setting up an E-Mail account as per the customer provided details. Services include but not limited to training on the features of the desktop or notebook, how to avoid viruses and how to perform a system restore/recovery.

EXTERNAL PERIPHERAL INSTALLATION AND SETUP

\$99 | M4296 | CODE: HT064**1 HR
SERVICE**

This service provides for the on-site unpacking, setup and configuration of external peripheral devices such as printers or scanners which are purchased from Harris Technology. Services performed include the installation of the peripherals associated software onto a desktop or notebook PC. Once the installation has been completed, and subject to time availability, the consultant will demonstrate the peripherals functionality by stepping through the manufacturer's manual generating samples and/or examples of the products operations. They will also briefly cover the various 'troubleshooting' options available either through the manufacturer's manual, website (internet access required) or Help Desk, and the steps required to make a warranty claim in the event of a breakdown.

NETWORK PC INSTALL

\$124 | M4652 | CODE: HT019**1 HR
SERVICE**

This service provides for a service consultant to unpacking, setup and configure one desktop or notebook PC so that desktop or notebook can successfully access the resources of the existing network. The service includes configuration of internet access and an E-Mail account provided the customer has the necessary configuration details. Once the installation has been completed, and subject to time availability, the consultant will demonstrate the PC's functionality by stepping through the manufacturer's manual generating samples and/or examples of the products operations. They will also briefly cover the manufacturer's manual, website (internet access required) or Help Desk, and the steps required to make a warranty claim in the event of a breakdown.

HARRIS TECHNOLOGY TERMS AND CONDITIONS

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**DELIVERY
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***RENTSMART**

The figures quoted are based on a per week basis over
3 years. Standard rentsmart terms and conditions apply.

RentSmart Offer

Toshiba Tecra A3X Bundle

\$23.52 | S7643
| Rent./pw* | 36 months

Intel Pentium M 750 1.8GHz Processor
12MB DDR2 RAM
10GB# hard drive
15" SXGA+ TFT (1400 x 1050) screen
DVD SuperMulti Double Layer Drive
Wireless LAN 802.11a/b/g
Up to 4 hours of battery life
Weighs 2.7kg
Windows XP Professional
12 months warranty
Bonus Targus Messenger Bundle* includes a Vibe
15.4" messenger case, retractable mouse, 4
port USB 2.0 hub and 128MB flash drive!

OSHIBA

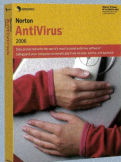


Windows XP
Professional



Only available while stocks last.
Not available in conjunction with any other offer.

RentSmart these add-ons...



Norton Anti-virus 2006
T0594
\$0.63 Rent./pw* | 36 months



Canon iP90 Wireless BubbleJet
R8579
\$4.47 Rent./pw* | 36 months



3 Years Extended Warranty
Notebook | S7643
\$3.35 Rent./pw* | 36 months

\$0.77 Printer | R8579
Rent./pw* | 36 months

\$4.34 Notebook | S7643 + Printer | R8579
Rent./pw* | 36 months



Get the Latest IT with RentSmart

Saves your Cash Flow | Immediate Approval | 100% Tax Deductable

TERMS AND CONDITIONS

This offer is available to approved customers who RentSmart business equipment at Harris Technology from 1.6.06 until 30.6.06. RentSmart \$2250 of equipment and receive a BONUS Ipod Nano (1Gb) in white. Offer not available on 24-month term. Limit of one Ipod Nano per qualifying promotional customer. Ipod Nano will be freighted to customer upon approval of application and receipt of RentSmart equipment. Not to be used in conjunction with any other RentSmart offer. Standard RentSmart terms and conditions apply. RentSmart is a rental facility operated by RentSmart Pty Ltd. ABN 62 233 046 288.

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TAX TIME SAVINGS

HP 3000 Series from

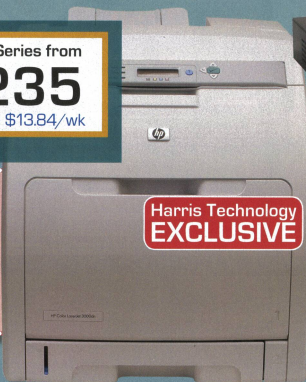
\$1235

Rent* from \$13.84/wk

¹See page 42

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Myer
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275 Alfred Street North
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Parramatta NSW 2150

ALEXANDRIA

Unit 1, 110 Botany Road
Alexandria NSW 2015

VIC

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612 Burwood Road
Hawthorn East VIC 3123

ACT

FYSHWICK
29-31 Townsville Street
Fyshwick ACT 2609

QLD

FORTITUDE VALLEY
356 St Pauls Terrace
Fortitude Valley QLD 4006

WA

OSBORNE PARK
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Osborne Park WA 6017

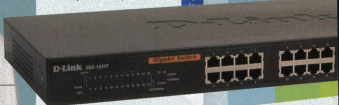
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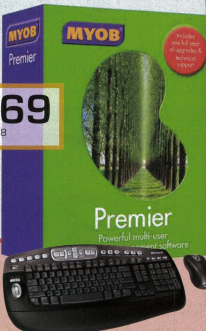
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